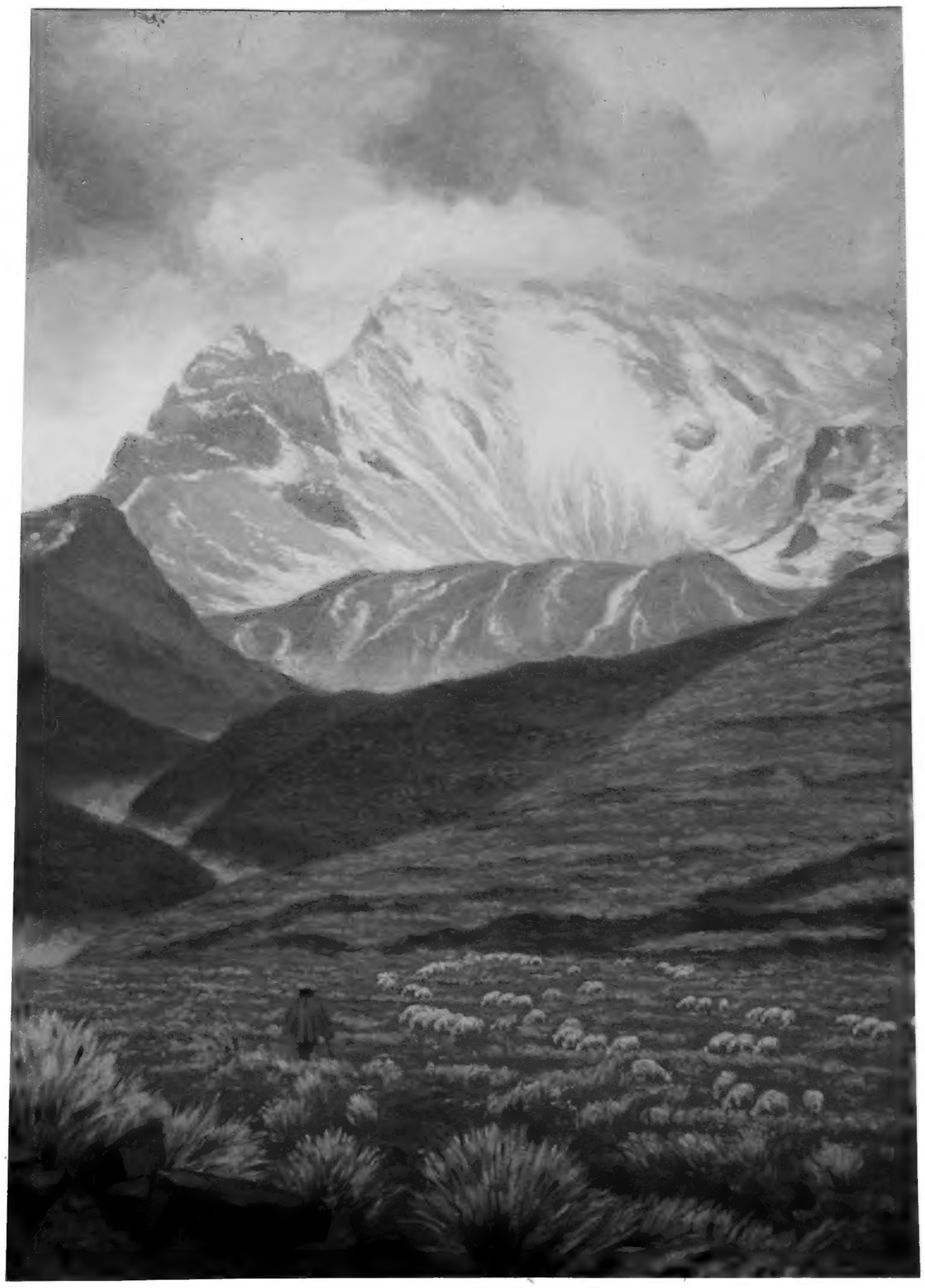
Wildflowers and Landscapes of Ecuador – The Way We Knew It

By Mary Barnas Pomeroy & Carl F.J.Barnas
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El Chimborazo II, **c.1937, oil painting by Carl Barnas (1879-1953)**

Editorial Note

The writer's prerogative, to paraphrase novelist Raymond Chandler, is for any infinitives she splits to remain split, come what may. Bearing that editorial edict well in mind, we at the Peter H. Raven Library proceeded with a mantle of utmost care toward the construction of this ebook so as to best enshrine writer Mary Barnaš Pomeroy's original style and intent. Because Ms. Pomeroy is no longer able to review or accept changes to her manuscript, which she had begun assembling and writing in the early 1940s, we have presented here the fundamental manuscript, scanned by Anne Hess, with all Ms. Pomeroy's own edits made in different time periods.

We would also like to thank Anne Hess and Flora Smith, Mary Pomeroy's daughters, for so graciously donating their mother's and grandfather's beautiful artwork to the library. The experience of creating this unique ebook, with its stunning artwork, has been joyful, enlightening, and visually satisfying.

- Randy N. Smith
  Peter H. Raven Library

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Introductory Note

What follows is an unpublished manuscript that my sister and I inherited from our mother, Mary Barnaš Pomeroy, when she passed away in 2010. It contains 238 botanical illustrations (and their descriptions) of Ecuadorian wildflowers of the Andes Mountains and jungle that she painted in her youth while living in Quito, Ecuador with her family during the late 1930s and early 1940s. She was born and raised in Germany until the age of 14 when her family chose to uproot and relocate rather than support the Nazi regime. They emigrated first to Prague, Czechoslovakia, then a year later to Quito, Ecuador, where she lived for 10 years before immigrating to the US at the age of 25.

Her accounts are the first known illustrated botanical records made in that region and are now a permanent collection at the Missouri Botanical Garden, St. Louis, Missouri.

Carl F.J. Barnaš, whose oil painted landscapes are also included in this book, was her father and first art teacher. Mother's illustrations, in fact, were done as a project while she apprenticed with him. Their biographies are included in the Appendix.

She spent many years of her adult life organizing and compiling the information contained in this book, with the hopes of one day getting it published. Initially she had to translate all of her writings and field notes from German to English, first by hand, and then eventually converting them into their current type written form (done in the days before computer use). Each chapter is color coded to more easily identify the illustrations that accompany it.

All of my mother's botanical illustrations are signed "CMB", the initials of her maiden name Catharina Maria Barnaš, and her oil painted landscapes are signed "CM Barnas". (Her father signed his paintings very similarly, using "C Barnas.) Later, after immigrating to the US and marrying, she became Mary Barnaš Pomeroy and signed her works "MBP".

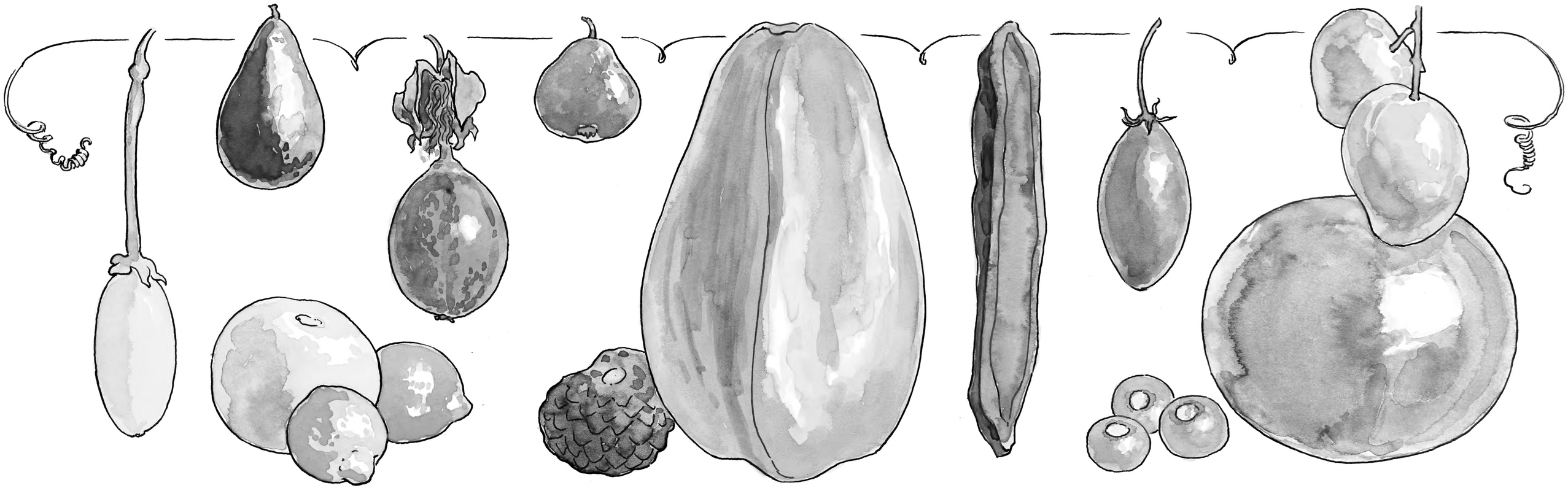
Note about botanical names…many may now be incorrect/different from what they were back in the days when this work was completed.

My mother would be absolutely thrilled to know that her manuscript is now becoming a virtual book that can be viewed by anyone online…..many thanks to the Missouri Botanical Garden for making this possible!

In loving memory,

Anne Pomeroy Hess (daughter)

Artist's Note



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Mary Barnas Pomeroy
88 Boronda Rd.
Carmel Valley, Calif.

Frieze of Ecuadorean Fruit

Long before we had decided to leave for Ecuador, I had been dreaming about the mystery of far-off jungle-land. At school, in Geography and Botany class we would listen with astonishment to the teacher's explanations concerning the infinite extensions of jungle covered land. The illustrations of such tremendous vegetation would seem to us children like the woods of former days, or the dark hidden places of a fairy tale. It really seemd every so far out of reach, so impossible.

On many of the pupils it had not made any impression. In me, however, it had touched something. Something which had been there always, although I was not conscious of it, and which gradually became a strong desire, to see and to explore such unknown territory.

The beautiful, though more cultivated forests of my own country hid so many unusual things. To discover them and to live near them thrilled me tremendously. I felt familiar with every tiny weed and every kind of tree. I observed their growth. Each had to perform its duty, its place in the whole community. The desire to know more about Botany was born. Exploring in unknown lands was my only dream.

No wonder I was very excited as our plan to go to Ecuador became true. And I must say none of my expectations have been deceived, but - on the contrary - highly surpassed.

Ecuador is the ideal land for exploration. It seemed as if science had hardly reached this country at the time when we arrived, more than seven years ago. I wanted to know more about botany. My desire to study could not be realized. Therefore, however, I chose another way to dedicate myself to plant science: the deficient way of self-teaching. I am going to tell you more about this, as it is nothing less than the history of the forthcoming of my collection of plant illustrations.

I decided to be an artist, and thus - on the way I had followed since childhood - I met "the plant as a person." This was an important moment in my life. Apart from the flowers themselves, I began to draw details as well as long- and cross-sections of the latter and thus I got acquainted with a plant's decorative value. How else could I have learned its importance in art and its own characteristics? There is no better and easier way.

And here are finally the reasons why I started my collection of flower drawings showing the subject in its natural appearance, size and way of growth.

First of all it is a selfish point of view which caused me to begin this work: My own interest in the matter as well as the marvellous practice in draftsmanship offered to me. But even more important is the second point.

As my own experience had taught me about the lack of scientific books on native plant life, and last but not least of good illustrations, there arose in me something like a desire to help. Although

I did not imagine it to be of much importance, I felt like adding my little bit.

Thus I started out drawing little wild flowers which I found at the roadside, and weeds in the garden, to find out an appropiate and instructive technique, adequate for the purpose. Then, with growing interest and more skill, I picked out more typical and attractive flowers. I want them to look just as they are in reality, and to show all their important features. To most of them I have added the fruit, to some the roots, just as it would be useful or help to show its decorative charm. If for instance a very characteristic thing, like a funny shaped berry or a bud were missing, I would hunt for it and not give up until I had found it, so as to complete the picture.

After a while there was an amount of pictures! Just pictures and no system to arrange them. Andnaturally, with it arose the question of classification. And, as it began to dawn upon my mind, it became the most exciting job.

I had started making notes and more detailed descriptions apart from the drawings. These facilitated the determination for me as a layman. Thanks to a few modest books and my self-obtained knowledge by accurate observation, the collection became somewhat more ordered. At least I could place most of the flowers according to families and genera.

By now it is almost six years ago since I began to draw the wild flowers. "Work" would not be the right expression though. At first it was only like a hobby, but now the thick bundle of about 200 illustrations looks like something indeed!

The far greater part represents flowers of Quito's surroundings. Although the oddest and perhaps most interesting vegetation dominates in the high mountain zones, and the subtropical and tropical jungles, it seemed to me just as important to make paintings of plant growth around the Capital. Its inhabitants should at least become familiar with the most common representatives of their every day flora. Besides, most of the time I stayed in Quito and thus I had the opportunity to work right there.

On two excursions of about two months duration to the Oriental jungle, I had an interesting harvest for my collection, though rather modest in comparison with the infinite number to be found there. If one would collect flowers during the trip itself, four days on horseback, one would never in the world reach Archidona, Tena and Napo, the spots where I selected the poor number of 33 species.

Also the road to Santo Domingo de los Colorados, which belongs to the jungle district West of the Andes, is a real paradise for botanists. I may have picked out some rare samples; thanks to brush and paint their beauty got out of the darkness hiding them.

Since Dr. A. Paredes became the professor of botany at the University of Quito, science as to native plant growth has progressed perceptibly. He is a diligent explorer who has made known many a flower and tree to his students. Owing to his assistance I can bring a few names. Without these, it would even seem useless to start making a description.

My collection almost exclusively contains pictures of smaller plants amd herbs. I paid much attention to them because it seemed probable to me that the more attractive ones might have been easier noticed and better known to science. Indeed this was the truth, as I happened to find out later:

Most of the representatives among Quito's typical bush vegetation in my collection were determined:

Buettneria ovata (Sterculiaceae), Solanum marginatum (Solanaceae), Cavendishia gilgiana (Ericaceae) (fig. 2), Monnina rupestris (Polygalaceae), Lantana rugulosa and Duranta triacantha (Verbenaceae) are never missing in that region (± 2.800 m. above see level) as well as Brachiotum ledifolium (Melastomataceae) and various species of thorny Barnadesia (Compositae), which usually prefer somewhat higher situated places.

Very characteristic smaller plants of the Interandine Basin are f.i.: Castilleja fissifolia and C. comunis, Hemimeris meridionalis (Alonsoa) and its white variety, Calceolaria hyssopifolia, C. serratifolia, C. gracilis and others, also Lamouruxia virgata (all of Scrophulariaceae).

Most of these very attractive and colourful flowers are ones' companions when climbing mount Pichincha. Some have left you long before you reach the real Paramo.

And up there, spread all over the wide solitary stretches among the tall gray paramo grass, you will find new little companions, even brighter than those avoiding the cold. Rucu Pichincha has offered me real beauties:

Halenia Weddelliana, Gentiana foliosa (Fig. 1), G. sedifolia with its light blue stars and the white variety thereof. Other members of Gentianaceae are G. cernua and G. rupicola which I got from the paramo of Cotopaxi and Chimborazo.

Culcitium uniflorum (Compositae) with its silver-grey fur coat and Bomarea glaucescens (Amaryllidaceae) could also tell you about the ice cold storms and the snow.

I must mention just a few more among Quito's most common plants. Bidens humilis (Compositae), Oenothera Caldasiana (multicaulis), O. prostrata and O. virgata (Onagraceae) for instance; then Dalea mutissi (Leguminosae), Gesneria Ulmifolia (Gesneriaceae) and Sida Rhombifolia (Malvaceae) are just a few examples. Bomarea Caldasii Quitensis (Amaryllidaceae) and Passiflora's find their way winding

themselves through the bush vegetation of creeks, on the steep slopes of which grow Callipsyche's, Stenomesson aurantiacum (Amaryllidaceae), Bromelias and Orchids.

This last group is richly represented by samples I met in the Oriente (500 - 700 m. above see level) and Occidente (1400 - 1900 m. above sea level). Besides, there are also many tiny flowers like Masdevallia nidifa with its queer shaped blossoms, like different Stelis species, etc. Also the family of Campanulaceae is very common in the jungle regions. Centropogon subandinus (Fig. 3) is a beautiful example, as well as Siphocampylus Jamesonianus from Baños, where the climate is subtropical (± 1.500 m.) Here my collection was enriched by Escobedia scabrifolia (Scrophulariaceae) and some typical plants of eatable fruits, like Guayava (Myrtaceae) and Granadilla Passiflora edulis .

In Guayaquil, situated in the coastal region, where the climate is tropical, I added Eichhornia crassipes, the beautiful floating lily with its lavender blossoms.

The families represented in my collection are:

Amarantaceae, Amaryllidaceae, Araceae, Asclepiadaceae, Begoniaceae, Borraginaceae, Campanulaceae, Caryophyllaceae, Commelinaceae, Compositae, Convolvulaceae, Coriariaceae, Dioscoreaceae, Ericaceae, Gentianaceae, Geraniaceae, Gesnerianaceae, Iridaceae, Labiatae, Leguminosae, Liliaceae, Lythraceae, Malvaceae, Melastomataceae, Myrtaceae, Onagraceae, Orchidaceae, Oxalidaceae, Papilonaceae, Passifloraceae, Plantaginaceae, Polygalaceae, Polygonaceae, Primulaceae, Rosaceae, Rubiaceae, Scrophulariaceae, Solanaceae, Sterculiaceae, Verbenaceae, Violaceae.

Finally, I alswo wish to mention my modest collection of fungus illustrations. In this branch of plant science I have been working with the same enthusiasm and perhaps even greater interest. This study of course offers more difficulties because of the very fragile consistence of these short lived organisms.

The illustrations are worked out in a different technique and form from the flowers. The fungus is usually not a decorative plant, and its shapes are softened, owing to its consistence. For this last reason I preferred watercolour paintings, without any lining, showing the subject in its natural surrounding. This is, however, not only for a decorative reason; more important is the scientific standpoint:

In my opinion it is very necessary to see where and how the mushrooms grow. Most of the specimens I studied are at home deep in the jungle, at mysterious dark hidden spots. They seem so much attached to the darkness that, taken away and placed on a white background, they would give a different impression. This however, cannot be shown without the illustrations.

My study on fungi had the same results as the flower study. The observations I made in Europe were very useful, and a good book

helped me to determine them according to genera. Unfortunately, I did not have the opportunity to paint more than 35 pictures thus far.

Most graceful things and richly coloured are: slender stemmed Marasmius and glimmering Hygrophorus, species I gathered in jungle and highland. Pyrenomycetes and other lower groups abound in this country.

As this is not the right place for more detailed descriptions I am just mentioning one more point:

It is hard to say which of these two large groups, the "green or the pale vegetation" is hiding most problems.

This question may be left for scientists to quarrel about!

Quito, 21st March, 1944.

Catherina Mary Barnas

WILDFLOWERS AND LANDSCAPES OF ECUADOR – THE WAY WE KNEW IT

by Mary Barnaš Pomeroy & Carl F.J. Barnaš

Color Code	Chapter #	Chapter Title & Description	Illus #'s
None	0	**FOREWARD**: The beauty of Earth our great love. Explaining why we work 'small'. A brief history of my work. Appreciation & acknowledgements for help with botanical identifications. The reason for our flower & landscape art: To delight the eye with Nature's freshness & variety; to encourage respect for these.	*
Yellow Green (YG)	1	**GENTLE EXPLORERS IN ECUADOR'S ANDES**: A nutshell history of my life & the resulting intention – to record wildflowers of various regions of that magnificent country: the Quito plateau, the Occidente (Western Andean Chain), the Páramo (high moorlands) of Mt. Pichincha, & the Oriente (Eastern Chain) to which our muleback trips led us.	**YG 1 to YG 40**
Red (R)	2	**A RIOT OF ORCHIDS**: Our first family outing into the Occidente. How a small gold-brown orchid in Saloya caused me to specialize in the smaller wildflowers. Our explorers' enthusiasm & joy when finding orchids in both Occidente & Oriente. The simplicity of our means & equipment. Some orchid species.	**R 1 to R 24**
Blue (B)	3	**SALOYA**: (Reprinted from AMERICAS MAGAZINE) Our return to Saloya. Description of a typical day in this beloved mountain jungle region toward the West. The myriad marvels we encountered.	**B 1 to B 11**
Gold (G) **Purple (P)** **Salmon (S)**	4	**RETURN TO QUITO**: Back to our home base. Contemplating & 'reliving' the contents of our paintings. Telling how I work & where. Presenting characteristics of the highlands around the Capital. Our favorite spots & typical plants.	**G 1 to G 13** **P 1 to P 43** **S 1 to S 5**
None	5	**GLIMPSES OF ECUADOR'S FUNGI**: About my quest for fungi in the New World. Brief commentary on basic mushroom ways – their mysterious world – but how important!	**Plate I through Plate VII (1 – 31)**
Dark Green (DG)	6	**AN INDIAN BOY MEETS MT. PICHINCHA'S FLOWERS**: A nature walk – mountain ascent adventure – learning the typical wildflowers of that lofty region with Professor Flores. The Indian Boy Hilario is the botanist's gardener.	**DG 1 to DG 41**

* Each chapter is followed by a group of wildflower illustrations & then their descriptions.

Foreward

WILDFLOWERS AND LANDSCAPES OF ECUADOR - THE WAY WE KNEW IT

by Mary Barnas Pomeroy

F O R E W O R D

We are not far from the year Two Thousand, and the way time seems to accelerate its rapid flow, that period will soon be here. So much depends on what we allow to happen n o w , that we all should feel a great sense of responsibility toward our incomparable planet. Its beautifully evolved settings are composed of forever volunteering plant species from the tiniest organisms to giant trees. The animal kingdom, too, is indispensible in this exquisite living totality. Underlying all is Mother Earth herself with her incredible geological variety - her magestic mountains, rocks of all shapes and sizes down to the minutest grains of sand. And - what would earth be without that precious element water in all its forms? and the oceans?

In presenting this book, I return to the years 1936-46, when I had been moved to that to me then enigmatic South-American country Ecuador - smack on the equator. In spite of frequent militaty revolts, life seemed to percolate peacefully and at a comfortable pace. The country was practically self-reliant in using most of its own agricultural products. To us who had left war-torn Europe, it was a paradise indeed.

We delighted in the picturesque Quito highland Indian people .

in their colorful dress. In spite of their poverty, there was a feel of contentment in their simple life style - dictated by the necessity for survival, and their acceptance of us foreigners.

The scenery with its great variety captivated our artistic spirits - from the incredible light of the high Andes mountains to the secrecy of the tropical emerald rainforests, bathed in life-perpetuating humidity.

My gratitude for having seen such undisturbed natural beauty is profound. It makes me wish to share whatever my father and I were privileged to capture on canvas, board and paper. It is the purpose of this book.

I admit that this is not a deeply scientific recording, yet one composed of first-hand observations and experiences. Father, the landscape painter, and I, the aspiring botanical artist, together depict and describe what we saw with unprejudiced minds and eyes.

For many restrictive reasons, we both worked 'small'. Certainly, his oils were thus readily transported - under the primitive conditions. That same reason applied to my botanical art. Mainly, however, I had decided to portray wildflowers - the smaller representatives of the floral kingdom. For all I knew, they had not yet been depicted by other floral artists; besides, I had always felt attracted to the small or even tiny wonders of nature. I brought them home from our daily walks to paint in the comforts and best suited lighting indoors. Each one of my 'children' drew forth my deepest-felt admiration for its perfection. And I soon found out that it was difficult to do the

actuality justice on paper.

With whatever books I had for identification of plant families and species, I came close to what was then considered correct. Since in botany nothing remains very long the same as to relationship discoveries and therefore nomenclature, I feel justified in presenting my flowers with the names which then were the likeliest and are still thus recorded in some botanical works. If they are now wrong, the pictures must speak for themselves and the names can be corrected.

Dr. Alfredo Paredes of the then UNIVERSIDAD CENTRAL DEL ECUADOR deserves much credit for helping me in identifying most of my flowering plants. After I moved to the US as art student at the PENNSYLVANIA ACADEMY OF THE FINE ARTS, I met Dr. Francis Pennell who had just returned from Peru. He became fascinated by my project and continued with more and better identifications. Due to his kindness, the director of the PHILADELPHIA ACADEMY OF NATURAL SCIENCES there arranged an exhibition of my work.

Next, my employer Herbert L. Mason at the Botany Department of UC Berkeley, whose FLORA OF THE MARSHES OF CALIFORNIA (1957) I illustrated, offered assistance, and so did Dr. Lincoln Constance who had traveled through the Andes and for whom I also worked.

In 1971, (O. Warshausen) J.Wurdak, L.B.Smith, Wm.Dressler and J.Cuatrecasas, USNH (Composites) of the SMITHSONIAN INSTITUTUION confirmed or imroved on our tentative identifications. In some cases, no one could be absolutely certain, because I had failed to collect and press specimens - a great shortcoming indeed. Dr.Peter Raven of the MISSOURI BOTANICAL GARDENS later arranged a showing of my

jungle flowers there and in other major cities. For the mushroom identifications, wonderful books were instrumental, and the following specialists were consulted: Dr.(H.D.)Thiers, Dr.Ponce de Leon, Dr.R.Singer; and Dr.Dennis, ROYAL BOTANICAL GARDENS, England. I am most grateful to all these botanists.

In both flowers and fungi (the latter likewise being a special interest of mine since childhood), I didn't - sometimes was unable to - study enough different specimens of each species to be sure that some statements in my descriptions are the norm; there is such variability even in common plants, in their macroscopic habit alone. This makes botany such an all-absorbing topic. But I didn't want to get too involved in the scientific aspect. For one thing, I didn't have a microscope to reveal the indispensable details for absolute certainty. It is lucky, therefore, that I didn't search for medicinal plants, although a few came to my attention. I painted each one strictly to convey its fresh, natural beauty in actual size.

Father shared this ideal of capturing the purest sense of beauty in his landscapes. We were so fortunate to experience both highlands and jungles before the great population explosion and oil exploitation of this 'developing' nation had become rampant. At least some typical scenes and a collection of delightful, mysterious, or even everyday-simple little plants are here 'immortalized' for other people - not so fortunate - to see.

When we started roaming our Quito vicinities, we had soon felt the need for a colorfully illustrated wildflower book of the Andes world. None existed. Therefore we had hoped that this

flower study of mine could contribute to such a one. But many obstacles seemed to be in the way.

Now that I finally put this work into form as a book of my own, I realize that it is far too incomplete to arrange into botanical order. I don't have enough species or even plant families to go that route. An infinity of scientific knowlege is as yet being gathered. Thus our book has to evolve from our experiences in the various regions we visited. Father would be happy about it. Only the two largest plant families - the orchids with their 15,000 to 18,000 species, and the composites (sunflowers) with 25,000 species - I presented as units, although small. Several more composites are given in the story of Don José and Hilario (Chapter 6) on their ascent of Mt.Pichincha, as well as in the first chapter: Gentle Explorers.

May this collection become a delight to nature lovers, flower enthusiasts, artists, travelers and explorers - people who care about the marvels of our gorgeous earth which certain types of humanity abuse, destroy or just alter, perhaps by sheer ignorance. We would like to help in halting such activities. May this book attract those very individuals who need to learn about the fragile hidden treasures along with the grandeur of Earth's interwoven patterns of all living and seemingly lifeless forms! All these are meaningful also by themselves.

I am confident that soon a deeper awareness of what we can do and how to do it - to preserve what is still vital for Earth's and our survival - will emerge, be acted upon and become an accepted way of life. A great intelligence is secretly at work

underneath all the chaos we witness, caused by selfishness, greed and stupidity. It simply m u s t manifest, so that the generosity of life may flourish for all alike. . .

Chapter 1:

GENTLE EXPLORERS IN ECUADOR'S ANDES

Chapter 1

G E N T L E E X P L O R E R S I N E C U A D O R ' S A N D E S

Ecuador - the land of my dreams! I never returned there after 1949 when I briefly visited my father after Mother's passing. Things then hadn't changed much since the decade of 1936-'46, when my parents, my sister and I lived there. I choose to remember it the way it was. As I leaf through the exciting new guidebook CLIMBING & HIKING IN ECUADOR by Rob Rachowiecki, I see a giant network of roads linking all regions where before hardly a few dirt roads existed. Today foreign tours, often university groups, explore the country, and mountaineers scale every lofty snow-capped peak.

All this is hard for me to realize. How primitive it was when we first emigrated from Germany to Ecuador! We didn't mind because we were grateful for a friendly country's welcome. Ecuador had no restricting quota for German immigrants and made great promises to prospective farmers.

My father, who had sailed six months before the rest of us, met us at the harbor of Guayaquil. The tropical heat and bustling populace of Indians, Hispanics and Blacks engulfed us, and at the hotel, all our bags including purses, were snatched away by officials who told us in rolling costeño (the coastal accent of Spanish) that we were under suspicion. Father already halfway

understood the language and translated. We felt taken aback but recovered next morning when our belongings were returned unharmed. It was only a mistake, the hotel manager said.

The fabulous train ride from Guayaquil to Quito restored our spirits. First the tropical jungle expanses, then the mountain forests and finally the high páramos (grasslands or moorlands) of the lofty Andes with Mt.Chimborazo's, Cariguairazo's and Cotopaxi's gleaming snow-caps took hold of our every fiber. Ecuador seemed like the very place I had dreamed about.

My father, Carl Barnas, was a German landscape painter, a man of free spirit who left his homeland for reasons of conscience. Through my uncle, Walter Sauer, who already taught geology at the Quito University, Father had found employment in the same city as art instructor at the Escuela de Bellas Artes. So there we settled.

I relive the visual clarity of the capital's high-mountain-presence. Called 'La Cara de Dios' (The Face of God), and set 2,800 meters (9,350 feet) above the sea, Quito i s nearly celestial against the backdrop of Mt.Pichincha's impressive mass which appears to lift her and all her guilded churchs into the clouds.

The crumbly Spanish-style house we first lived in gave Mother surprises unlimited - forever-green eucalyptus wood in the cook stove, turned-off water supply, electrical outages for days on end and misunderstandings with the changing parade of kitchen help because of her novice household Spanish. But we all managed and tried to get in tune with the new sense of time. We must

learn to choke frustrations when the many kind promises made by nearly everyone we met were seldom kept. Always the word 'mañana' brought relief, but when 'tomorrow' came, the promises had evaporated. They were intended as courtesy.

More frustrations came with learning Spanish, when my sister, Dora, and I - sixteen and fifteen years old - had to ettend the girls' college 'Veinticuatro de Mayo'. We audited classes while being tutored daily at home by one of the young college professors. We had just managed to acquire the Czech language in the same 'tutored fashion' in Prague, Czechoslovakia. There at least we attended a German school and made friends easily. Now as 'gringas (outsiders), we met with whisperings and ridicule. Was it because we were tall and fair among our black-haired colleagues?

Over the years, my desire to see all I could of my new home land grew. I couldn't forget the jungles and the high peaks. The latter we could see along the horizon as they rose from the distant mountain chains behind the closer ranges - particularly good views from the barrio (neighborhood) Floresta where we later built a house. It was the only wooden house in Quito, a Swiss chalet. During two weeks of strong earthquakes caused by volcano Cotopaxi, we walked as in a dream of uncertainty - dizzying and frightful. We wanted a strong house.

Due to severe cold at the art school - broken windows and no heating - Father became very ill, and his teaching career ended. Returning to his beloved creative work revived him, however, and his delightful landscape studies in oil were bought by the

English and American ambassadors and by local hacendados (ranchers). My father's best friends and customers were the three Mena brothers. They were educated Spaniards who had been abroad and learned to speak French. One of his more curious commissions for them was painting a study of three tsantsas (shrunken heads of victims of the head-hunter tribes). The Menas also brought him antique paintings to be restored and introduced him to the monks of various convents who supplied him with hundereds of religious paintings to be rejuvenated. Our family income was assured! Father later founded a museum of Colonial Art in the convent of the San Francisco church.

This led to his near 'triple-sainthood' for restoring a huge madonna painting for the church Santa Rosa de Ambato: To have the people willing to release it was the first miracle. To have it returned by air, sparkling new, the second. And to have it survive an earthquake when almost everything else was destroyed, the third. He was honored at a glamorous festivity.

Meanwhile our parents decided that we girls should quit school. We fully agreed: progress was slow because the teachers often just didn't show up for class. Dora then took private lessons in book-keeping and shorthand from a German teacher, and I became my father's student in all forms od art - drawing, painting in oils and watercolors, decorating, and even some retouching of Colonial works - Father's patients-on-canvas. But Mother continued to teach us French and English which she knew very well.

Father and I had always shared a deep interest in nature. In

our original Hessian home in Laubach, Germany, our house was set on a hillside surrounded by flower meadows, fields and woods. There he used to take Dora and me on daily walks, and we would watch roe deer, hares, foxes and birds. Father taught us the names of trees and plants and made us see their beauty. We delighted in the seasons.

Here in the high Andes, everything was different. The days and nights were always equally long. It was hot in the sun, cold in the shade, and icy at night - summer and winter within twenty-four hours. Six months of regular heavy rains in the afternoons, six of drought. The vegetation was entirely new to us. The mountains looked stark and barren but for small forests and rows of Australian-native eucalyptus trees, introduced by the Spaniards. Parks and gardens boasted exotic plants from all over, but we were most intrigued with the native species abounding in the fascinating quebradas (canyons) which split the steep mountain skirts.

One day, Father said, "I wish I had the time to draw all the gorgeous wildflowers of Ecuador. I can barely guess at their families. It would make a wonderful book it we could learn their names. There aren's any such books in the country. Why don't you get busy creating one?"

And so my focus came into being: I would draw small flowers and try to identify them, studying botany on my own. I had a good start in that field from my schooling in Germany. But now, it would become a specialty in my art training as well - part of my exploration.

I began with simple weeds for practice. Amazingly, they didn't look too bad. The ink lines steadied, the colors gave substance to the spaces between them. What fun to portray something so tiny, fixing it on paper for a record! It had to be life size, I decided. My magnifying glass - a gift of my aunt in Holland who knew that I loved nature - came in handy. The intricacies of stems, leaves and blossoms stood out clear, crisp and vital. My technique became easier, and I made brief descriptions of each plant.

As my collection of more unusual species increased, I sought help from Dr.Alfredo Paredes, who was then head of the Botany Department of the Universidad Central - himself an eager student of his native flora. Two books were just being published by the university press: "Contributions to the Knowledge of the Vegetation and Flora of Ecuador", by Dr.Ludwig Diels,1938, and "Synopsis of Ecuadorean Plants", by Dr.William Jameson. They were helpful books but had no illustrations. Much better was the herbarium of Padre (Father) Sodiro, a Jesuit botany teacher sent for by president Gabriel García Moreno, via the Roman Catholic Church during the last half of the 19th century. How exciting to browse through these ancient folders under Paredes' supervision!

Our exclamations upon recognizing plants we sought to identify, brought members of the department to our side, one by one. Paredes' enthusiasm about my work was borne out when in 1940 he honored me by arranging an exhibition of my flower illustrations. I had then already painted some outstanding natives: Calceolarias, Castillejas, Gentianas, Bidens - to

mention a few. By the time I left Ecuador, my collection counted 200 species.

In our days, Quito had only 150,000 inhabitants and o n e not very tall 'highrise' office building in which my sister found employment with Shell Oil. When hiking up the various approaches to Mt.Pichincha, with the small Indian fields spreading in neat patterns partway up the falda (skirt), we looked back upon the tan-and-white adobe and red-tile capital below us and saw the Shell building like a mere sugar cube. The higher we climbed, the panoramic views of distant peaks north, east and south, became more spectacular. Hummingbirds whizzed by us, inspiring us for any ascent.

For me, the crowning High-Andean adventure was the overnight trip from Lloa to the crater of Guagua (Child) Pichincha at 3,500m (± 15,696 feet). Paredes had invited Father and me on a university botanical expedition and gave us excellent horses to ride. The university crew hiked, and two mules carried the gear. To have a señorita, let alone a gringa, along, was in those days most irregular. Ladies were intended to sit prettily at home in elegant clothes, look down from their balconies and tell the servants what to do. That women had accomplished daring explorations centuries ago, was little known here, and traditions lingered in musty homes. Did I contribute my share in telling these men that women can rough it? I hope so.

For a brief moment, I saw inside the fumarole-puffing crater. (One of its fiercest erruptions was in 1660, and the most recent in 1981 was a very minor one). When mist mysteriously formed,

blocking our vision of that huge cavity, filling it exactly to its crenulated rim, I could imagine fiery lava underneath. Overhead, small white clouds blew across the sky and a pair of Andean condors wheeled near the high crags.

We collected precious gentians, a low-growing purple mallow, a rare yellow daisy forming small carpets - a typical habit of rough-weather plants. Paredes anf Father photographed Arquitectas (*Culcitium nivale*) and Altramuz de Monte - lupine. The latter is a white fur-clad pyramid with purple flowers peeking through at the tip. At dusk, we roasted sausages, and an Andean lobo (small gray wolf) came nearly close enough to share our supper. Nightfall came as suddenly as we knew it would here on the equator. Our thin tent was a welcome shelter, but we almost froze in our home-made sleeping-bags. Next morning, the world glistened in hoar frost, and the distant snowcaps stood under a cloudless sky.

Father and I had visited the Occidente or western jungle, but never the Oriente or eastern jungle toward the Amazonian basin. My sister had been privileged to live six months in Tena, as secretary to our missionary friends, and she had met a German family living in Archidona. Not long after, we were invited to stay with both families. We would be gone for two months. What great opportunity for us adventurers with eager eyes and paintbrushes in hand!

Besides the road from Baños to Shell-Mera, no other roads leading into the Oriente existed. There was only the badly paved road from Quito, by Guápulo below, through the deep gorge east,

through the plain of Tumbaco, ascending and finally ending on the high páramo. The taxi driver dropped us off, and Mother and Dora waved us farewell. As appointed, the mule train awaited us. How glad we were of our woolen ponchos as we crossed the rugged Páramo de Guamaní. Again we marveled at the high Andean flora growing in low mats or wearing fuzzy garments against the icy winds. These carried new fragrances from the blossoming mountain forest we rode through. It alternated with green meadows and their glittering streams and cattle grazing. Raising cattle had already become part of the Indians' life style, along with growing potatoes and beans. Our first night was in the village of Papallacta, consisting of low-thatched chosas (huts) with a hole in the middle for smoke to escape. We slept in the primitive adobe church building on its wooden floor.

For the next three days, our trail meandered through denser jungle, over endless hills and through deep river gorges. As we descended, we had to shed our woolens. Incredible flowers of bright reds, magentas and orange - many in the Lobelia Family - reached into our path toward more light. We crossed swaying foot-bridges while the mules forded the streams below. The animals knew each dangerous turn and how best to get through stretches of deep sticky mud. To a wide-eyed young woman, a fairy-story unfolded page by page. Our Indian overnight hosts were always friendly and generous: meals of lentils, rice and fried eggs were offered us practically for free.

The Ruedigers' simple but beautiful hacienda (farm) - situated at an altitude of 600m (1968 feet) - came into view in its jungle

clearing. The land here was level and without forest shade, so that the heat bore down on us. Only a few giant mata-palos (strangler-figs) were left standing. An enormous breadfruit tree sheltered the thatched-roof bamboo house. Our new friends welcomed us inside, and it was like home-coming with the German language flowing back and forth. The two small shy daughters hid from us, but curiosity soon won out, and they showed us around.

The following morning, the teniente político (government deputy) of the village Archidona arrived on horseback to welcome his rare gringo guests. He was a handsome Spanish-looking young man and he handed me a bouquet of red roses. I don't remember what I answered; I was too overwhelmed and didn't know enough about complicated Spanish etiquette. But it was a most romantic start to an adventurous time. Although I saw the teniente only one more time, it kept me dreaming the wonderful dreams of youth. My jungle wanderings with Father, sometimes with our friends or an Indian guide, contained deep mystery. Observing amazing detail of animal and plant life, painting flowers and scenery, swimming in the green Misahuallí river, kept us well entertained.

When after dark we sat chatting with our hosts by an oil lamp, what looked like miniature aircraft would fly in! They were cucuyas, ±2"-long click beetles, probably *Pyrophorus noctilucus*. Once they landed on a ledge or table, they looked like tiny automobiles with two white headlights and red or green tail-lights. These out of thousands of bugs left their enchantment.

One day, Mr.Ruediger found a huge boa constrictor coiled up in the pasture with his precious few cattle and calves. He rushed

home for his gun, shot the snake precisely between the eyes, and with his Indian helpers brought it to the house. It was very heavy. They placed it on the covered back veranda. What a gorgeous creature! It measured four meters (over 13 feet) and was thick as a trunk. It continued writhing for two days. The Indians wanted the meat for food, so our friend cleaned and hung up the skin. The drying process was a smelly affair attracting hosts of flies - not native to these tropics but having been introduced with the cattle. Already it seemed like a vicious circle: white man raising what really didn't belong and wouldn't be needed in the natural, self-sufficient world of the rain forest natives who lived off its wild plants and fruits and cultivated small gardens.

During the second half of our two-month journey, we lodged in the guest house of our American missionary friends, the Cedars, in Dos Ríos (Two Rivers), near Tena. Their attractive two-story house sat at the head of a gentle rise, its rectangular garden full of tropical flowers and native shrubs. The Pilche tree, hung with shiny dark-green or black gourd-size 'rubber balls', fascinated us. Its trunk and branches were host to tiny pink and yellow orchids; so were the orange and lemon trees there. A Yerba Luisa (lemon grass) tuft, and Guayusa bush of honey-flavored leaves were used for tea.

From the top floor of the house, one could see the confluence of the two great rivers - Misahuallí and Tena - which flow via the Napo to the Amazon. All around us was tall, vivid-green jungle, some pasture-land full of stumps and solitary giant

trees, with blue mountains in the distance. Active volcano Sangay showed on the horizon, often with a smoke plume during the day, and at night - every ten minutes - with fire.

One morning while poking about our cottage, we noticed a few large ants on the wall. Before we realized it, the entire room was black with ants, from ceiling to floor and all over the beds and furnishings. From an opening in one corner issued a foot-wide parade, purposefully dividing into branches that never stopped. As quickly as we had ever gathered up our paint gear, we did so and left our little house. Our friends told us not to worry but to return in a few hours. The ants would then have left. They were nature's own cleanup troup leaving not o n e cockroach in the bamboo walls. We returned after a morning's work and they were gone.

The Jumbo (pronounce "Yumbo") Indians were very friendly, somewhat Oriental-looking, and the men were beardless. They still lived the good life 'off the land' unlike most of the highland tribes who had become servants to Spanish land owners. To some degree, however, a new way of life had begun for them with the Protestant missionaries' new school. They learned Spanish and seemed to thrive on the Bible teachings. They were full of laughter and delightful shyness.

We were fortunate to witness the once-a-year fishing the Indians of that area were allowed with Barbasco - one of various poisonous plants, probably a *Verbascum*. This was pounded and crushed by the women, then mixed with water in a dugout canoe. The men then dumped the milky soup into the river where currents

distributed the poison within a netted-off area. Soon many fish floated to the surface, stunned. Hundreds of Indians along the normally deserted river banks and in dugout canoes speared the fish on long barbed spears or caught them in nets. The boys dove for them, with one surfacing, a fish in each hand and a third in his mouth.

Over the years, I fell in love with Ecuador and applied for citizenship. What a blow to discover that although my parents were accepted, I was refused because I was not of age upon arriving in 1936. Tired of endless red tape, I applied for an immigration visa to the United States to study art. Within a year, when I was twenty-five, I moved to Philadelphia. "The Pennsylvania Academy of the Fine Arts" held me there for two years. Then the West beckoned, and I have lived in California ever since.

My sister married an American working for Shell when still in Ecuador but also moved to the United States. Some years ago, she sent me a recent news report showing the road construction by American army engineers through Archidona and Tena, our two beloved jungle villages:"that Ecuador could better fight its wars." And a lot of desacration of natural beauty to extract oil has since taken place. I shuddered at the photos of slashed forests that were so magnificent and wondered if we could still turn the tide.

Is painting a subconscious effort to preserve the past? I hate to think that the flowers I knew and depicted are no longer growing and that my father's landscapes exist no more. I hope

it's not too late to halt unnecessary destruction; that Ecuador's dramatic scenery will prevail, her irridescent blue morpho butterflies continue to fly like birds above the Misahuallí, and her native wildflowers to inspire - in nature's own way.

Chapter 1 (YG):

ILLUSTRATIONS

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(Asteraceae = Compositae)
'botoncillo'


C3.

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(Asteraceae Compositae)
Gaillardiopsis ciliata

10.



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(Scrophulariaceae)
Veronica persica
'Bird's-Eye' Speedwell

3



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(Scrophulariaceae)
Bacopa dianthera

YG
4



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VF
5

(Violaceae)

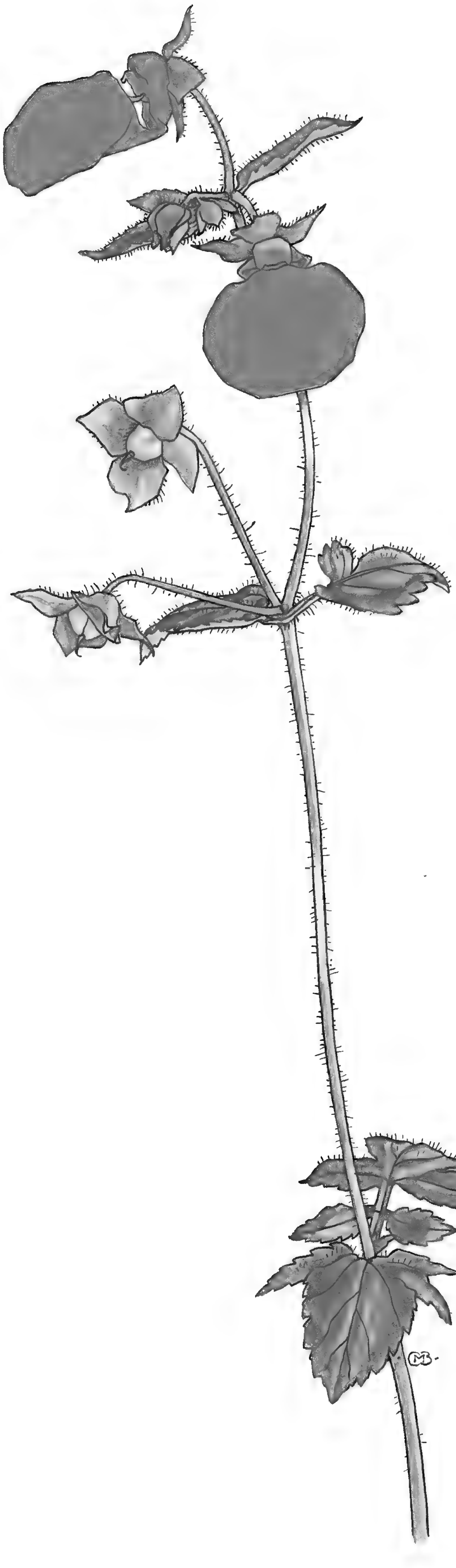
Viola humboldtii.

14



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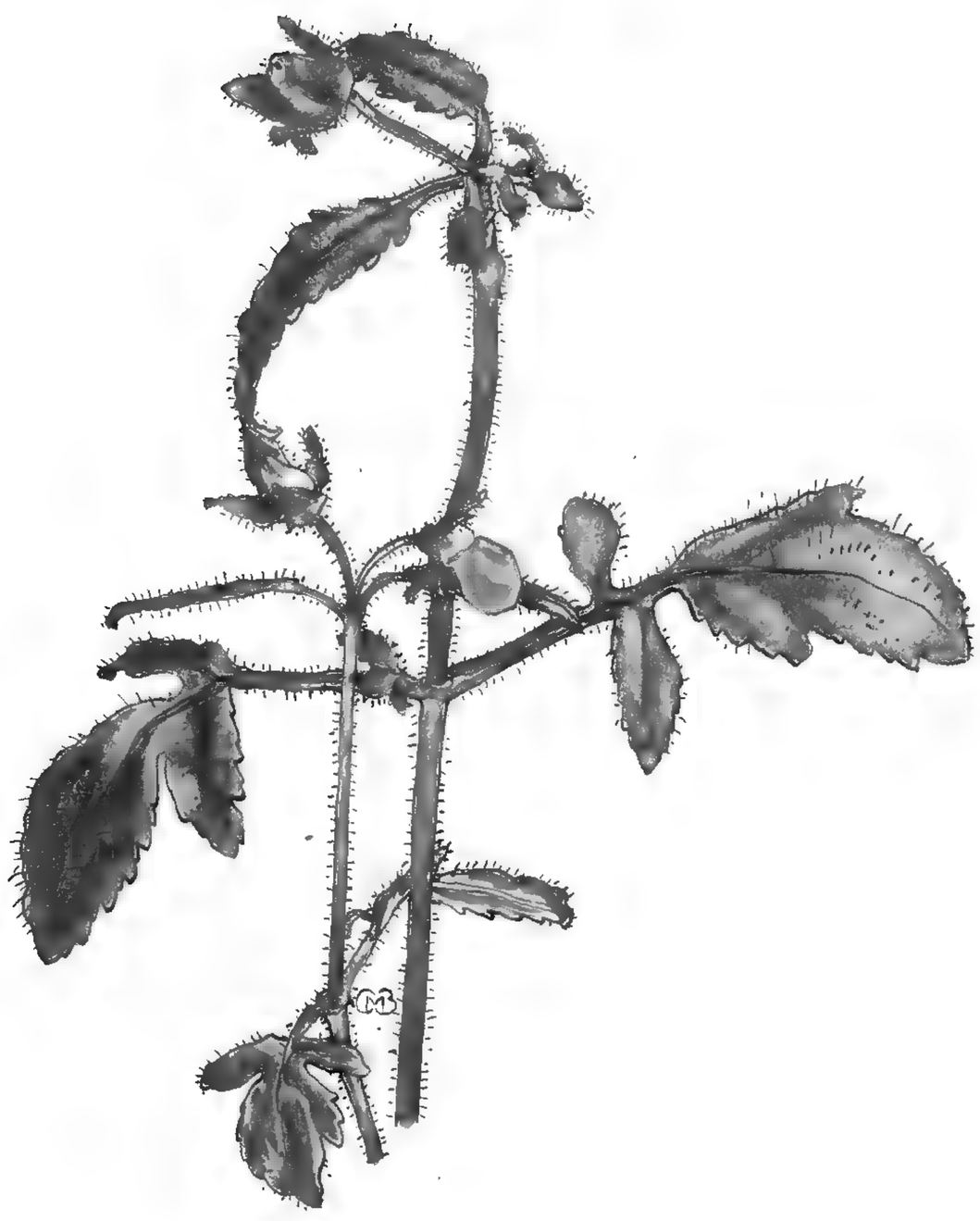
(Violaceae)



Calceolaria tripartita (Scrophulariaceae)

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(Scrophulariaceae)
Castilleja
'Wolsitas'



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8

Calceolaria palmeri.
155.



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Y-9

(Scrophulariaceae)
Calceolaria gracilis
'Bolsitas chicas'

22



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(Scrophulariaceae)



(Campanulaceae-Lobelioideae)

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- Tena, Oriente; Tropical jungle. February.
- Forms tall clumps.

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Gesneriaceae YG 12

{ Gloxinia multiflora
Sinningia

86



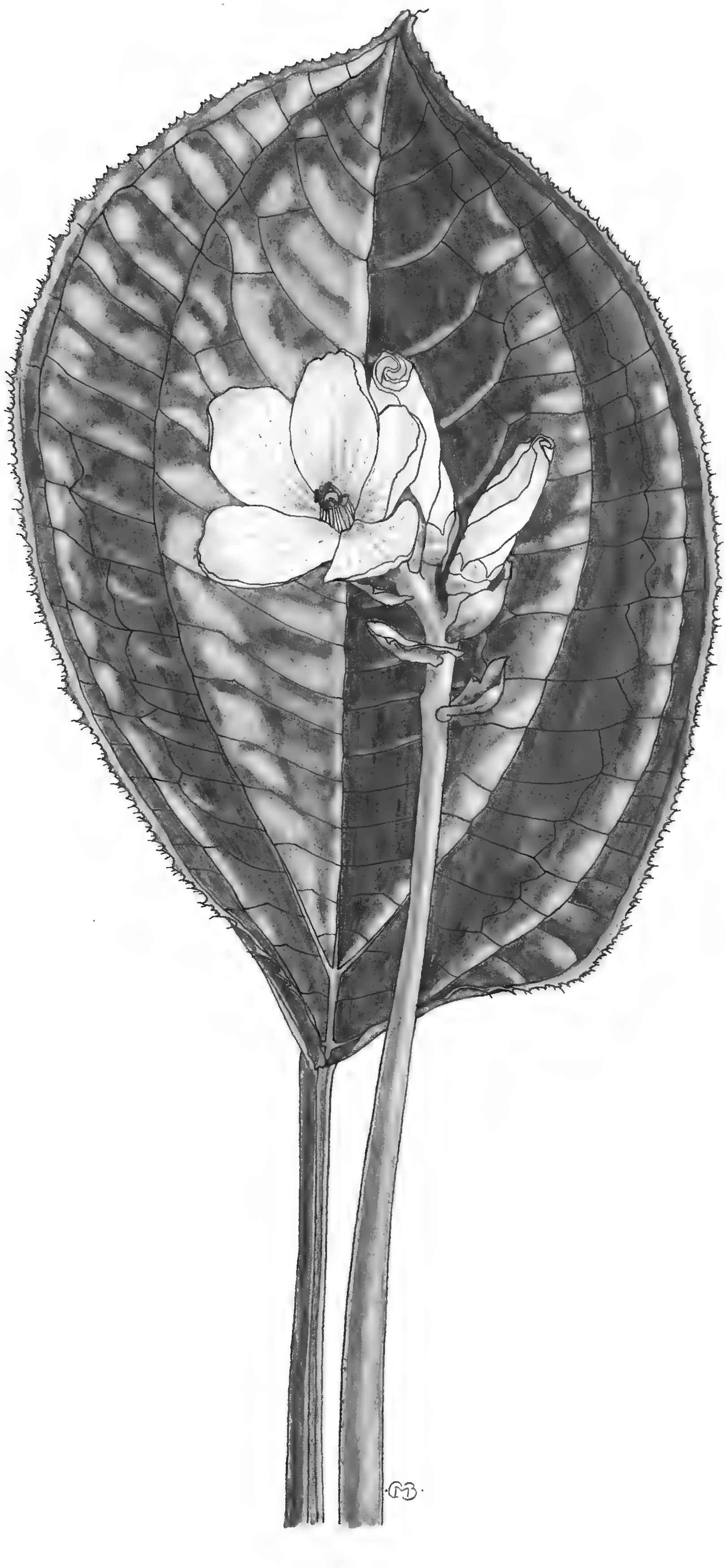
Tropical

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YG
13
(collected in ...)
Dichorisandra
(det. L. B. Smith, U.S.N.M.) 76



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- In dark [illegible] - grades of [illegible] tree steps. Near [illegible] River, Amazonia [illegible]. Common [illegible] Wilson - April.
- Usually 1-3 leaves from [illegible] 1 [illegible] 10 - 14 flowering stems.
- 5 grades of 2 white [illegible] each. [illegible]

Y = 15

[illegible] primulaeflora Hook.f.
(Melastomataceae)
[illegible] 84.

© [illegible] WBD



... Tena; Erecte, tropical
... jungle clearings.

(Commelinaceae) YG
Commelina 16

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8



- Aizoaceae - Fig. ... Flowers in terminal groups (Ficoid family)

- Key characteristics ... Distinguishing features among the genera

- Flowers in ... cymes ... Key to 183 Alloplectus, with the 4 stamens fusing together

(Gesneriaceae)
Dry habitat

45 17

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• Tena, Oriente. Tropical jungle. In bloom March, April.

• Shrubbiec. Wooded branches. Leaves leathery.

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(Fabaceae = Leguminosae)
"Mimosa Inuesca" YG 18
Calliandra arborescens

185.



- Arundoa, Arenta, tropical. In cleared by June ...
- Vine with often pubescent branches.
- Petioles and outside of bud velvety.
- Latex exit, white, sticky milkseps appears.

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(Apocynaceae) VE 19
Echites ...



- Tropical
- Cosmopolitan in distribution, "Das Pflanzenleben der Tropen"
- Bloomfield in Fedde
- Prolific climber, sending its [illegible] up [illegible]

- [illegible] S-shaped [illegible], [illegible]
  On the [illegible] a Stone [illegible] [illegible] [illegible]
  tips. Also [illegible] [illegible] [illegible]
  [illegible]

- Petals [illegible]

(MB. [illegible] 1930.

(determination) Y= 20

Annotationes cibiciorum R.&P. 91.



- Arcuate, Orient; alone roadsides, but also in darker parts of jungle. Tropical. Jan.-Feb.

- Spanish weed. Also very common. Taller, more bluish purple peduncle. Flowers bright purplish-magenta.

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(Scutellaria)
Scutellaria coccinea
Crimson Skullcap

Y=
21



- "Dos Rios" - Tena. Oriente. Tropical jungle. April.
- Flowering shrub - its young shoots bearing glossy rose-red leaves.

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(Solanaceae)
Juaita sisa
Psamisia

YG
22

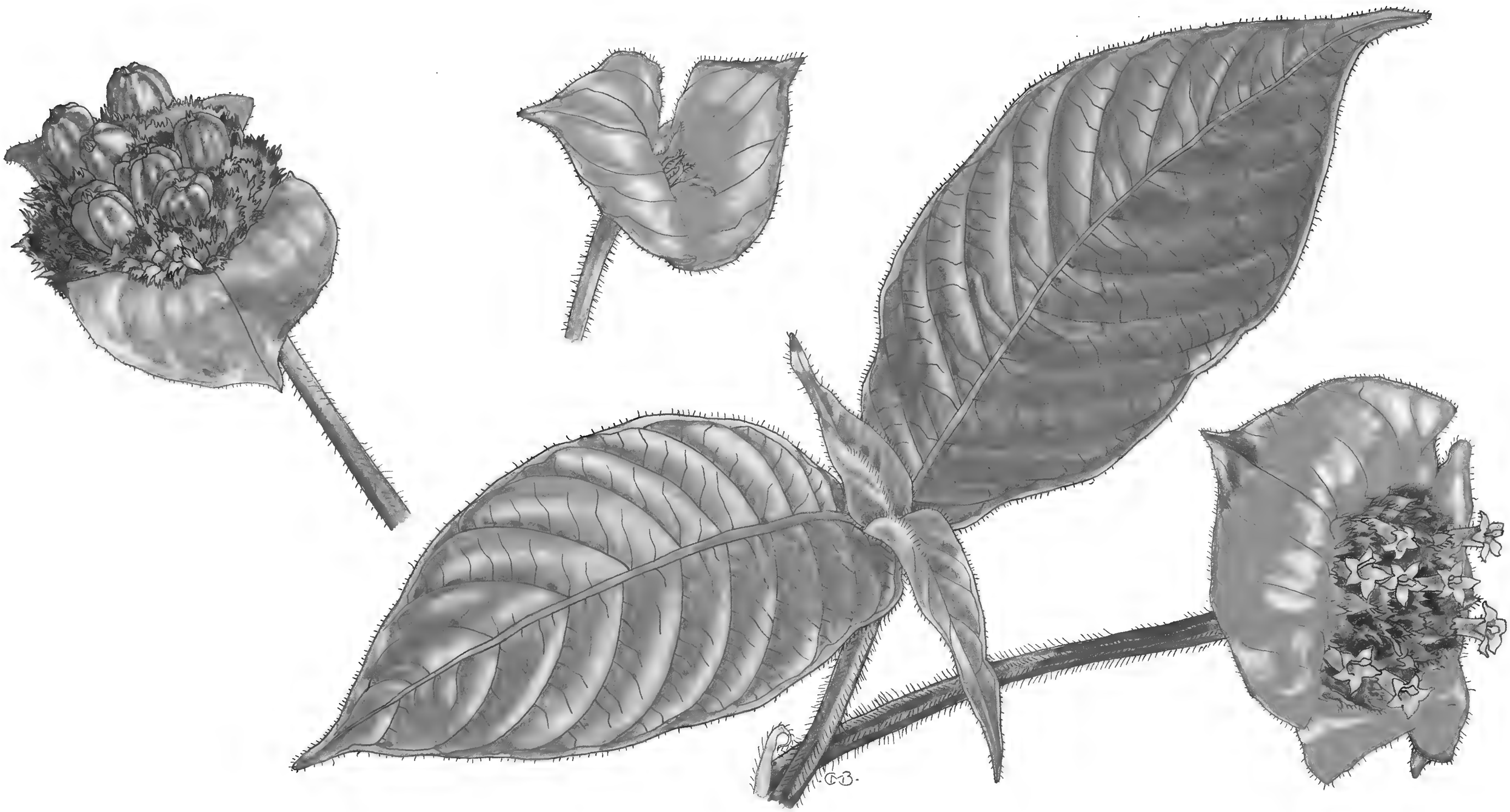
193

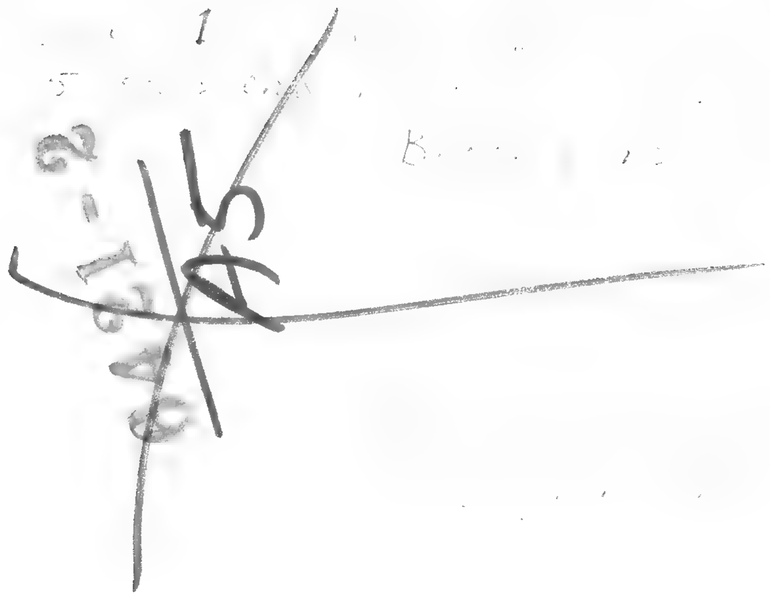


©

(Illegible)

YG 23







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Cephaelis tomentosa
ipeca



. Near Mishahuallí river, dark tropical jungle, "Dos Ríos", Oriente. February.

. The pale-yellow throat of corolla is finely dotted in buff.

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(Gesneriaceae) YE 25
Diastema eggersianum
88.



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(Gesneriaceae)

V= 26

(Diels: – Hippiella
(Jameson) – Gesneria } ulmifolia

107



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YC

(Fabaceae - Leguminosae) 28

Bauhinia candicans.

'yutsu' / pata de vaca

184



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(Fabaceae - Leguminosae)
Cassia tomentosa
205.

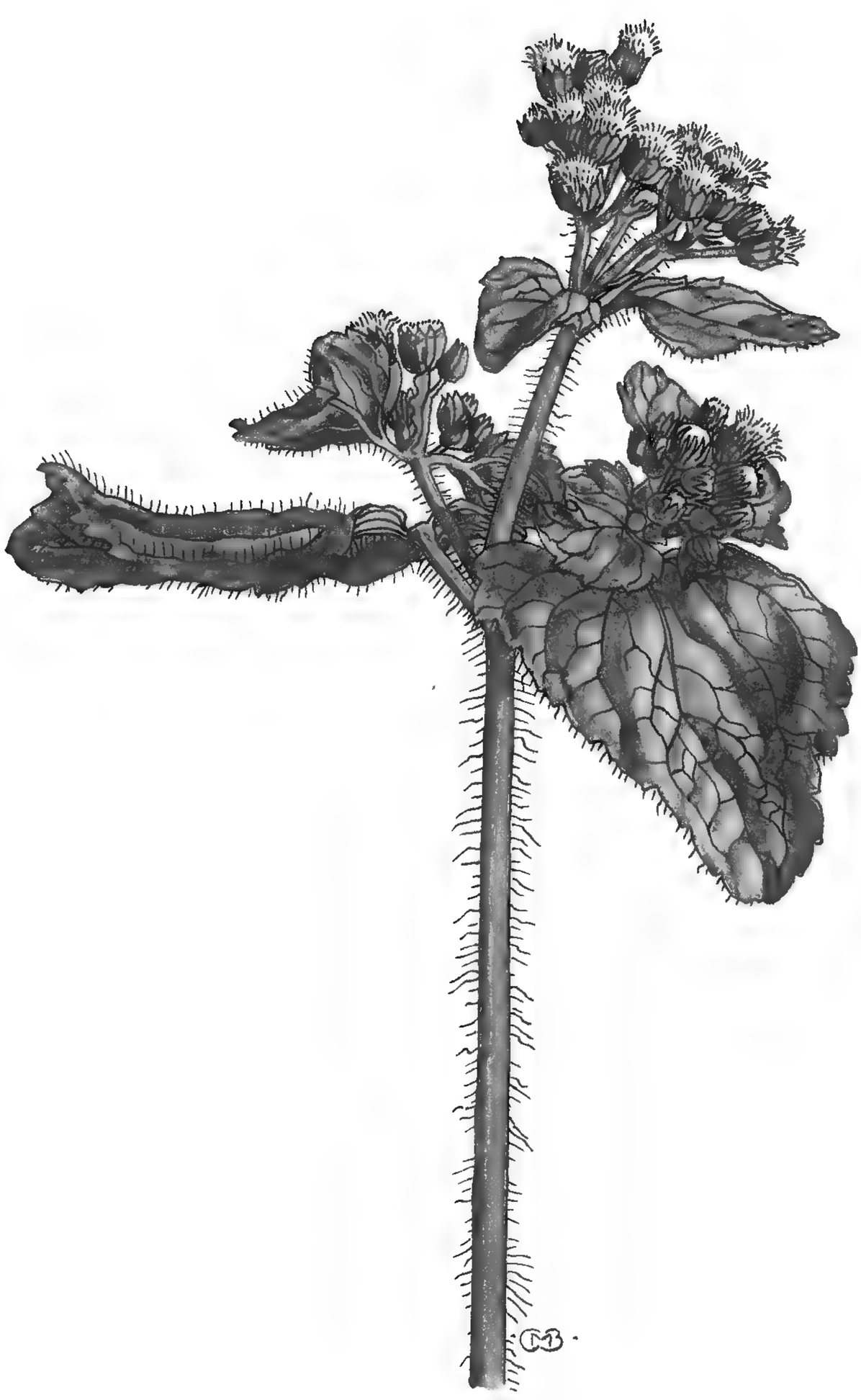


- Near Arcadia, Calif. Tropical. In open area in the jungle - January.
- Small stem, petioles and peduncles purplish-red, glassy.
- The variegated parts of the "trefoil" form the shape of a butterfly with its wings spread. The central part resembles a coat-of-arms. Reverse side of leaves a striking maroon red.
- Flowers "double"

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(Oxalis)
Oxalis

YG
30



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Asterinella ?

Agerectum cerizocides YS 31



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(Onagraceae)
Jussiaea = Ludwigia

42.



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88 Boronda Road
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(Convolvulaceae)
Quamoclit coccinea

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((illegible)) VS 34

Pseudomonas sodiroi (Hieron.)
Cuba

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(Commelinaceae)

40.


CB.

- Erect
- Bases, scattered, ca. 5 cm. apart, in large groups. - Blooming in June, July.
- Stems straight, of pungent odor when cut. ± 1 m. tall
- Leaves sessile, hard and papery to the touch. to 11 cm. long.
- Rootstock tuberous, with bright orange-red, rubbery simple roots.

(Scrophulariaceae)
Isoplexis grandiflora
(L.F.) Kuntze
46 36

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- Baños, Citrate, subtropical. Blooming and fruiting in June & July.
  Found also in Cuba, Chile, in August.
- Up to 1m high, herbaceous "weed", growing along road sides.
- Fruit a glossy-green berry, ripening enclosed by enlarging calyx.

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(Solanaceae)
Chamico YG 37
Nicotiana physaloides



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(Vertical scroll)
Southern California.

YG
38
173.



"Los Ríos" near Tesia, Orient. Nigeria. Jr. Harmattan season.
. . . edicels rise from every other leaf position along node of the water vine.

(B. Mary Fleet 22 February 1973 D.
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(continued on)



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Plate
Campanulaceae Y-40
Siphocampylus jamesonianus.

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Chapter 1 (YG):

PLANT DESCRIPTIONS

YG *1 - Spilanthes mutisii* - botoncillo - *ASTERACEAE* - SUNFLOWER FAM.

'Little Button' is the common name aptly given this inconspicuous 'Sunflower'. Most people would call it a 'weed'; not only is it small-blossomed, of scrawny stature and leaf, but a prolific garden-and-roadside volunteer of the Quito environs. We found it thriving along our trail between Chalpi and Baeza as well. I give it 'first place' because it led me on to deeper insights into the Plant Kingdom - via the creation of this extensive collection of ever more fascinating, complex and exotic flowers.

The small composite flower-head looks somewhat club-shaped because of its gradually widening receptacle. About ten short yellow rays surround the globe-or-pyramid-shaped, deep-yellow 'heart' of disk-flowers. The leaves broaden abruptly from the flat leaf stalks; they are serrate and hairy. Simplicity is the charm of this wildflower.

YG *2 - Galinsoga ciliata - ASTERACEAE-COMPOSITAE* - SUNFLOWER FAM.

Should we call it 'weed'? Indeed it may form sizeable plants perhaps disliked by gardeners, but along roadsides it contributes to the green wonders springing up and flourishing untended. This small portion shows the delicate beauty of the straight hairy stem and paired branches, their opposite leaves, and the tiny, daisy-like flower-heads. The latter top hair-fine pedicels (individual flower stems). Each receptacle looks like a

diminutive green pot, holding the domed yellow disk-flower center, surrounded by five miniature white ray-flowers.

It is common around Quito, and along the way between Chalpi and Baeza, and in Dos Rios, Oriente. Aparently, it adapts easily to various altitudes and may well have formed sub-species and varieties.

YG *3 - Veronica persica* - Bird's Eye or Speedwell - *SCROPHULARIACEAE* - FIGWORT or SNAPDRAGON FAMILY

Most everybody should be famililar with members of the speedwells, for they appear in lawns and freshly-planted fields, beguiling us with their exquisite blue flowers. This species is introduced from Europe and thriving around Quito - a suitable place for an herb said to be named for Saint Veronica.

Its small broad leaves are toothed. They proceed in criss-crossing pairs from the delicate pinkish stem. The blossom's individual stalk (pedicel) is hair-fine and rather long. 'Bird's-Eye' describes a fantasy-bird's yellow pupil annd blue iris. The blue consists of four spreading rounded petals with purplish striations; the paler one is narrower and is the lower.(This picture's view makes it look like the upper).Its opposite petal represents the two upper lobes fused into one - a phenomenon common among countless others in this most variable plant family. The two stamens have blue anthers.

This baby plant was an excellent teacher to me - an aspiring botanical artist.

YG 4 - *Bacopa dianthera* - *SCROPHULARIACEAE* - FIGWORT or SNAPDRAGON FAMILY

The meadows and slopes around Quito abounded with this small bacopa - a species of that largely New World genus. Many species are tropical and others aquatic. This temperate one here tends to spread flat on the ground, its pale-green stems closely set with leaf-pairs that are mostly facing the same direction (contrary to criss-crossing). The small leaves are broad at their base, rounded and tapering to an obtuse point Their edges are scalloped (crenate).

The small yellow flower tubes are of bilateral symmetry, having three broader lobes, and two smaller ones with fine brown striations. They are well enclosed in the soft-green calyx made up of two slender, two oval elegantly-tipped sepals, and one broader one. The pedicels are fine, often longer than the calyx, and arise from leaf axils. There are two longer and two shorter yellow filaments with whitish double anthers. The style is green and the capsule two-valved.

YG 5 - *Viola humboldtii*- Humboldt's Violet - *VIOLACEAE* - VIOLET FAM.

Even a modest violet is endemic in Ecuador's Andes. It is named for the great explorer Alexander von Humboldt who must be one of its discoverers. It prefers the altitudes of 2900-3000 m and is common on the way to Cruz Loma - the first summit to be reached when climbing Pichincha. It blooms in August.

Its creeping stems bear alternate bright-green leaves with

elegantly-toothed stipules subtending their short stalks. The leaf blades are scoop-like with a bold sweep. New shoots form in the leaf axils. The delicate floral stems (peduncles) likewise arise from those axils - one each time, and with a single blossom. Here too, we find a scoop-like feature: its broad lower petal with decorative deep-purple striations. This is the landing platform for pollinating insects. To its sides, two 'wings' spread out, and above, two backward-folded petals. All five petals are pale lavender, somewhat darker on the outside. Five orange stamens form a ring around the ovary. It is a dainty flower-jewel of the highlands, where the moorlands or páramos begin.

YG 6 - *Jonidium parvifolium* - *VIOLACEAE* - VIOLET FAMILY

When your eye becomes trained to spot dainty detail, you may find this tiny white violet. It blooms from January through May in Quito's environs: meadows, eucalyptus woods, the slopes toward Guápulo. Small though its features, it spreads profusely from knotted roots, sending out trailing stems from which numerous leafy and flowering shoots arise.

The small oval crenate leaves come in pairs that alternate direction. The hair-fine individual flower stems (pedicels) sprout from these leaf pairs, and four simple stipules unite the diminutive leaf stalks (petioles).

The tiny, rotund, shiny-purple-red calyx bends forward from each ascending flower stemlet. Its diminutive blossom consists of

a four to five mm wide, two-lobed white lower petal with a yellow-green fleck in its throat; and four mm-sized white-and-lavender upper petals, ± crowding each other. The small globe-shaped capsule hangs down with the now drooping pedicel.

A good lense will make you wish to paint a portrait of this baby blossom amid its greens.

YG 7 - *Calceolaria tripartita* - bolsitas - *SCROPHULARIACEAE* - FIGWORT or SNAPDRAGON FAMILY.

The Calceolarias or 'Slipper Plants'- being typical in Ecuador's highlands - come in a great variety of shapes and sizes. The people would give the common name zapatillas to most species, but this one should definitely be called bolsitas - 'Little Bags'.Its flattish-round, pouch-shaped, rich-yellow blossoms are large compared with those of most other varieties. But their upper 'lip' is small. This flower has a lovely silken sheen and a modest fragrance.

The main and floral stems are slender, shiny-reddish and hairy. The green, somewhat hairy leaves are three-to-five-lobed and serrate; the lower ones may even be double-serrate. The leaf-pairs are usually far apart on the tall, thin stem. the boldly four-sepaled calyx opens out flat or even points away from its 'golden baggie'- toward the graceful pedicel.

We found it blooming in April in a shady wet place beside a rivulet near Quito; in Jan.& Feb. along the road near Chalpi.

YG 8 - *Calceolaria palustris* - *SCROPHULARIACEAE* - FIGWORT or

SNAPDRAGON FAMILY

Although this little beauty was drawn and recorded in Baños at 1800m, I must here include it with the other species of similar characteristics - particularly the ± three-lobed leaves. The leaf-stalks are longer than in *C.tripartita* and are typically deep-red-purple with a pale-green reverse side. Being opposite (paired), they clasp the stem which is also deep-red-purple for a short distance just above this junction. The short stems are rounded and glassy, and the entire plant is hairy.

The delicate ± 1cm long flower-stems are greenish while in flower, turning red toward fruiting.

The six x four mm pouch-shaped blossom is lemon-yellow with pale upper lip and bottom side. The relatively large calyx lobes spread wide when in bloom, but ascend gracefully around the swelling conical fruit.

It is a common wildflower on dry mud walls and along the roadsides of Baños, blooming in June-July; a subtropical charmer with precious detail.

YG 9 - *Calceolaria gracilis* - bolsitas chicas - *SCROPHULARIACEAE* -

FIGWORT or SNAPDRAGON FAMILY

Around Quito and somewhat lower, this graceful 'Slipper Plant' adorns gardens, road-banks and old mud-walls (tapiales). We also found it in subtropical Saloya. Its blossom is again a 'Little Bags' type compared with 'Boxing Gloves' or "Little Shoes or Slippers' from Mount Pichincha. There just aren't enough common names for the countless species and varieties of Calceolarias.

This one is similar to the previous, but distinctly more graceful because of its more deeply-cleft, often multi-lobed, slender leaves. The blossom is a light-lemon-yellow, flattish, oval bag or pouch ± one cm long, with a small orange-flecked, closed upper lip, like a bottle-top. The capsule, too, is of decorative shape, especially at the time of splitting.

This attractive wildflower seems less common than others of its genus. It starts to bloom in April-May. It has a wild-primrose-like fragrance.

YG *10* - *Calceolaria serrata* - zapatitos - *SCROPHULARIACEAE* - FIGWORT or SNAPDRAGON FAMILY

Let me name these decorative models 'Indian Slippers'; they have 'turned-up-toes' closing broadly over their nearly calyx-hidden upper part. the outside is pale-greenish-lemon, and the inside has a dull-red blotch in the throat. It has the usual two stamens, one style. It is delicately primrose-scented. A hummingbird's beak can enter it from the side, thereby instantly opening the flower wide like a maw and unfurling the astonishing length of this 'slipper's sole' with its lateral folds.

The four calyx lobes are greenish-brown outside, pale green inside; they are squarish with upturned edges.

This species is named for the serrate - actually double-sawtoothed margins of its smooth, dull-green leaves. These are rounded at their base - coming from a short leaf-stalk -, and tapering to a point. They are arranged in pairs that alternate direction. The purplish main stem is smooth.

Already in January, it may be blooming in Quito. It was common on Ichimbia.

YG *11 - Siphocampylus sp. - CAMPANULACEAE* - sometimes placed under *LOBELACEAE* - BELLFLOWER or BLUEBELL FAMILY

Around Archidona and Tena, especially the Dos Rios area, this climbing plant with exquisite, long-curving, pink floral tubes (corollas) was - hopefully still is - a common sight. It loves shady places amonst shrubs, letting its upper portions hang down and its flowers reach upward.

Its main stem is rounded, somewhat twisted, grooved where the single leaves emerge. It is soft-green, shiny like silk, its lower portions often streaked or touched with rose-lavender. It contains gummy white liquid of pungent odor.

The whorled leaves extend horizontally from short petioles; their blades are broadly-oval with elegant tips, and diminutive pale teeth along the margins. Their upper surface is shiny-yellow-green, the reverse pale-green of silky-sheen.

Each floral stem has two slender projections (stipules?) where it proceeds out of the leaf-base. Young blossoms resemble parrots' beaks, and the open ones stretch forward what looks like a tusk - the stamen-column - with curved bearded anthers.

The globe-shaped capsule containing numerous small seeds points downward on its long floral stem. The five long sepals persist with sweeping elegance. All in all: a gem of the tropics.

YG *12 - Gloxinia pallidiflora - GESNERIACEAE* - GLOXINIA FAMILY

In February 1940, we visited a garden in Tena and were impressed by the beauty of several clumps of this showy gloxinia (now siningia). It had been brought from the jungle and planted in this wild garden. The plant's stout, pale-yellow-green stems are characterized by thin, red, vertical streaks - as if pencilled on. Red splotches and margins emphasize the joined stalks of each leaf pair. The nearly circular leaves are large, shiny dark-green on top and short-hairy. They have a light-green central nerve, running into the obtusely-angled tip. The margins are saw-toothed. The leaves' reverse side is dirty-pink with pale-green venation.

In bud, the flowers look like pale-green, silken-haired buttons, each set within its five broad, glossy sepals. The latters' more yellowish outsides show red margins at the tips.

Each blossom is a pale-lavender jewel - an irregular bell reaching slightly downward from its ascending glassy floral stem that widens toward the calyx. Four of the flower lobes turn outward, but the fifth at the bottom is formed like a dish with wavy margin. One stout white style with yellow stigma rises from the central basal corolla openinng. Two shorter and two longer white stamens - antler-like - adhere to the upper portion of the throat. Underneath is a dark-violet-red 'varnished' splotch and fine horizontal grooves in the corolla's lower surface. The flower's outside is stiff-hairy but for the lobes.

YG *13 - Dichorisandra sp. - COMMELINACEAE* - SPIDERWORT FAMILY

A relative of the 'Wandering Jew' - *Tradescantia* - is this *Dichorisandra*, a common wildflower in Archidona's habitat. Glassy-soft-green noded stems bear elongate, parallel-nerved, alternate, near-sessile leaves. Their margins tend to be wavy. Their color is dark-green.

The flowers are arranged in terminal clusters. Branch-like peduncles sprout horizontally, alternating directions. Each one of these may bear several blossoms in succession.

An open flower shows the typical three-part design - that is really six: the three outer - smaller - inwardly white segments, and the three inner - larger - deep-royal-blue segments; and six dark-lavender stamens sitting in a resulting white triangle. A most artistic design.(Possibly, the pistillate flowers come separately?)

We have found several closely-related species - one with much larger leaves, more robust stem, hairy at the leaf bases, and with a very sizeable inflorescence of cerulean-and-white flowers, lavender on the outside.

YG *14 - Aphelandra aurantiaca - ACANTHACEAE* - ACANTHUS FAMILY

Of the ± 200 genera and 2000 species of the ACANTHUS FAMILY, most thrive in the warm climates of America. Some are showy or decorative in gardens. This orange aphelandra is one species of a genus not uncommon in the Tena area. Its eye-catching form and

color struck us when we emerged from the steaming jungle interior; it reached out from the lush greens on the river-bank of the Misahualli at Dos Rios.

The long sweeping corollas come from criss-cross opposite arrangements of closely set, bright-yellow-green bracts with gracefully-ciliate margins. This spike lengthens as the flowers open - always displaying a flame-like cluster of them at the top. Each extremely long,thin flower-tube ends in a pointed upper lip with outward-rolled sides. The lower lip bends downward with its three lobes spiralling upward. Four long soft-orange-silky filaments arise from ± eight mm above the corolla base. They have brown anthers. The long style remains when the blossom drops. The small calyx is hidden behind the bracts.

The sturdy, tall, round stem has large opposite leaves, also in cross-wise pattern. They look somewhat irregular - their margins long-wavy, but the fish-bone venation even and elegantly curving into the margins.

We felt we had come upon a true jungle treasure. Can it yet hide among tropical lushness of river-banks? Perhaps it is being grown and enjoyed by the now numerous inhabitants.

YG *15 - Monolena primulaeflora - MELASTOMATACEAE* - One of the largest families of South America - 3000 species.

In the dark jungle near Archidona, close to the Misahualli River, backed by mossy tree stumps, we found Monolena. Her specific name indicates 'her' resemblance to a primrose - however

superficial. It was the end of January 1940. Then in '43, the plants were abundant and blooming during March and April.

Each one has one to three large oval leaves with that family's typical five longitudinal ribs running into a tip. A network of ± horizontally arranged fine veins connects the main rib-structure in gentle curves. Each leaf stands erect, is glossy-yellow-green in front, less shiny on the reverse side and showing the choice venation as raised reddish pattern. The margins are minutely toothed, each tooth bearing a short hair. The leaf-stalk is long, trough-shaped, with red edges.

The up to ± 18cm tall, glassy-red peduncle comes from among the leaf-stalks. It slenderizes toward the top where alternating bracts subtend the individual buds and open flowers. In bud, the five pale-pink petals with richer-pink tops are twisted clockwise. Five stubby sepals bear a pink spot each. Five sets of each two white filaments with yellow anthers surround the style with its elongate flat-top stigma. The petals have delicate gray striations that terminate in finest pink 'branches'.

'She' is a beauty of the forest-floor.

YG *16 - Commelina sp. - COMMELINACEAE* - SPIDERWORT FAMILY

A gorgeous herbaceous plant with striking cobalt-blue flowers is this Commelina species, common in Archiodona & Dos Rios. It loves sunny clearings and roadsides. Has it been introduced from other parts, perhaps along with the pasture grasses? It certainly behaves like a 'weed', the way it abounds. Other species of this

family grow in the Quito highlands: *Tradescantia Quitensis* whose flowers have three equal, light-blue petals, and *T. gracilis* - similar to the white-blossomed 'Wandering Jew' - *T. fluminensis* - a prostrate plant.

The commelina here shown has silken-green stems with short hairs, but conspicuous ones at the brown-margined leaf nodes. The alternate to bunched leaves are simple, elegantly-sweeping, lance-ovate with deeply-creased mid-rib. Parallel nerves are seen on the reverse side.

At the top, often three folded bracts project horizontally, side by side, enclosing two peduncles each; each of the latter with several flowers. The blossom is bilaterally symmetrical: two ± spade-shaped blue petals and one diminutive, pouch-like, white petal in front. The sepals, contrariwise, have the two larger ones in front, and the smaller one behind the two large blue petals. All sepals are scoop-shaped and pinkish-green-transparent. Of the six stamens, the three upper ones have cross-shaped, lemon-yellow anthers; the three lower have yolk-yellow anthers: two oval and one horse-shoe-like. The style is reddish-violet with round stigma.

YG *17 - Drymonia sp. - GESNERIACEAE* - GLOXINIA FAMILY

In the Archidona and Tena areas where lemon trees are grown, this drymonia abounds. It blooms in March and April. Its stems are woody and shrub-like at the base, then snaking upward - often high - into sheltering vegetaion;they are round and somewhat

rough. The latter is true also of the leaves. These are fairly dark-green with pale-green emphasis along the rib-pattern. The reverse side is light-green all over, showing the very even raised rib-structure. The leaf margins are toothed. The petioles are one cm long or less. They come in pairs.

The flowers, likewise, arise opposite each other, in the leaf axils. The reddish floral stems widen and are green just below the calyx. The latter, in its decorative, bilateral symmetry, consists of wing-like sepals: two smaller lower, and two upper with a small central one - all having saw-toothed, red-tipped margins and soft-red coloring between the veins. The flower tube projects laterally, a bit downward, its two upper lobes upward, two lateral ones outward, while the long, broad lower lip invites insects to a landing. Both upper and bottom segments are more deeply fringed than the latterals. The silky-white of all parts is speckled with violet-pink, but not outwardly. Four white stamens bend towards each other, their anthers at first pale, then lemon-yellow. Just above these, the corolla's 'ceiling' is decked with tiny yellow glands. The yellowish hairy style reaches forward, showing the yellow stigma like a beak.

Sometimes the corolla is pure-white and its reddish stippling practically missing. In such case, the calyx-lobes, too, lack the red decorations but for the red tips of their margins.

Plants certainly present us with individuality in each feature of each specimen.

YG *18 - Clitoria arborescens* - machin huasca - *FABACEAE* - BEAN or

PEA FAMILY

It happened near Tena, March-April 1943 - that after finding countless flowers belonging to exotic families, it was like meeting an old friend when I came upon a shrub that said "Bean Family" - however in an exciting novel way: with impressive dimensions of habit, leaves and flowers. Its lower stems are woody, reddish-brown-striate, the upper shoots greenish-shiny.

The alternate leaves project from between two brown stipules, on horizontal petioles - knotty at their base and also where the three large leaf segments turn at an abrupt angle to show their shiny green tops. Each leaf is 10-17 cm long, with beautiful, simple rib-structure of opposite to alternate laterals, all curving into each other near the margin. The leaves' reverse side is pale, leathery, yet with silvery sheen.

The calyx of three longer and two smaller sepals is subtended by two bracts; the short pedicel likewise. The impressive flowers are in long inflorescences; they have a delicate fragrance. Ten white stamens bear brown anthers. The style is of the same coloring, somewhat hairy.

Each gorgeous large blossom reminds of a fragile sea-shell with the broad banner's outside streaked soft-lavender, and its inside white with longitudinal rose-colored central decorations. Wings and keel are white touched with lavender-pink.

YG *19 - Echites hirsuta - APOCYNACEAE* - DOGBANE FAMILY

In January 1940, a saunter through 'Hacienda Ruediger' near

Archidona, led to this superb flowering vine. It wound its way and partially covered the gramalote (grass) and shrubby growth. The brownish round stems are hairy, the leaf-stalks likewise. The large oval, shiny-green leaves end in a slender, sweeping tip; they are opposite.

From such leaf-pairs arise the floral stems with numerous alternating to whorled flowers. The short pedicels and green outside of the flower-tube are velvety. The long buds are ± club-shaped, showing their lobes' twist to the right. The open blossom flares into five yet twisted, tissue-like, yellow petals. A bright-red semi-circle at the base of each lobe leads into the striate rose-red interior of the tube. Its five whitish stamens are inserted where the throat widens. There are two ovaries, yet one stigma. The five-part calyx is free from the ovaries.

The Dogbane Family with its ± 150 genera and 1000 species is widely distributed, particularly in warmer climates. All its members are characterized by a milky juice contained in stem and leaves. The well-known temperate periwinkle - *Vinca major* - is a good example.

VG *20 - Arthrostema ciliatum - MELASTOMATACEAE*

The Archidona, Dos Rios and Napo jungles are the home of this exquisite climber, where it often reaches the very heights of towering trees. It started blooming in February. Its slender green stems are angular, sparsely set with short hairs. At the leaf-pairs' axils, or chiefly where leaves have been, a circle of

such hairs appears. On short, lightly twisting leaf-stalks, the shiny, long-heart-shaped, parallel-nerved leaves all face the same way. They have finely-toothed margins.

The luminous-lavender-pink flower is in four parts, the diminutive calyx segments atop the inferior ovary included. Each free petal is asymmetrical in design; together, all four create a windmill shape when opened out flat.

The stamens are of fantastic construction: four long ones - half pink, half white, ± S-curved - bear pale-violet anthers; ± half-way up, a short pink structure terminates as a pale-yellow, bi-pronged fork on each filament; four short white stamens have violet-yellow anthers and two spreading pink threads each. The whitish-green simple style reaches forward from this fanciful arrangement. No doubt, all this is designed for pollination carried out by special creatures - Nature's infinite ingenuity.

YG 21 - *Scutellaria coccinea* - Crimson Skullcap - *LABIATAE* - MINT FAMILY

This small bright wildflower was fairly common in the Archidona landscape - along the wayside as well as in darker parts of the forest. It bloomed in Jan-Feb 1940 and, hopefully, blooms yet for future generations.

Although this genus belongs to the Mint Family, its species are non-aromatic. They are characterized by the strange hump-like protrusion on the back of the calyx; *S.coccinea* bears it on its tiny, roundish, purplish-brown, two-lipped one. This is the 'skullcap' as worn by the Romans. The long, slender-based, short-

haired corolla-tube reaches upward as if showing off its squarish hood - a part of the upper lip; two narrow lateral lobes suggest a pink mouth, and the broad, flat lower lip has three scallops. Two long and two short stamens with cream-colored anthers are hidden within. The style has a forked tip. These decorative blooms arise in bracted pairs on tiny pedicels. They form a terminal cluster of mostly an uneven number.

The leaves are blunt-tipped, nearly heart-shaped, their leaf-stalks almost as long as the distantly-serrate, wavy-edged blades. They are opposite, spreading from the slender, angular stem. This is greenish to maroon, turning reddish as it becomes the inflorescence.

We found what must be a related species or subspecies, most frequently near Tena: the plants were taller, more robust, its stems nearly purple, and the flowers a purple-magenta. The leaves' rib-structure was designed in pale emphasis. Yet another jungle mystery?

YG *22 - Psamnisia sp.* - huaita sisa - *ERICACEAE* - HEATH FAMILY

Here is a striking jungle plant in the Heath Family - somewhat shrubby but chiefly a climber. It was brought to me by Manuel Vallejo who worked for 'Hacienda Dos Rios' of the American missionaries. It was the end of April 1943.

What fantastic contrast between the bright-green of the older leaves just below the fiery inflorescence and the brilliant-crimson to rich-pink (gaudier than my watercolor pigments could reproduce) of the younger shoots! The latter are soft, but the green ones, leathery. All are glossy and neatly bordered by parallel nerves close to the edges. They are beautiful ovals with elegant tips. The reverse side is finely speckled. The stems and peduncles are red-green-streaked. All outer parts of the floral spike are sprinkled with glandular hairs. This includes the warty, pot-shaped calyx, and especially the long, rough yet glassy-vermilion flower tube which narrows into a whitish-pink 'beak' with five minute, red-rimmed points.

Five longer and five shorter stamens bear half-white, half-yellow, double anthers - like two bottles pressed together, with terminal openings for the pollen to escape. Just below the anthers, the taller filaments are hairy. The style is twice as long as the stamen group; it is white with a flat green stigma. It would be easy to imagine pollination by a hummingbird's needle-fine beak or the unfurled proboscis of a butterfly. I did not stay around long enough to witness such happenings.

YG *23 - Alloplectus sp. - GESNERIACEAE* - GLOXINIA FAMILY

A then common plant of the lighter as well as dark parts of Archidona's rainforests, this aloplectus shows one more of the *Gesneriacea's* bizarre forms. It bloomed for us in March-April 1943. It is a shrub whose round,'furry',cork-brown stems climb tall jungle trees and practically unite with them. The flower-bearing branches may hang down from the very canopy.

The paired, oval leaves taper into a point, their margins distantly-toothed, and slightly in-rolled. They feel velvety due to short, dense hairiness. Their upper surfaces are fresh-green, their reverse ones pale. Their venation is ± alternate from the central rib. Their petioles are short and sturdy.

Typical are the rows of pendent floral stems with their showy sets of broad-oval,crimson bracts, each containing one flower tube. The latter's tip emerges in advanced bud-stage, stretches longer, opening up and rolling back its five red lobes. The tube is bilaterally symmetrical. Its red fades into whitish toward the ovary. The four white anthers sit on pale filaments - pinkish above. The robust pistil is reddish; its stigma velvety-yellow-white. The calyx's design corresponds to that of #17-*Drymonia.* But this *Alloplectus's* is orange with crimson venations.

There are color variations: some plants have orange bracts and corollas instead of deep-red.

YG *24 - Cephalis tomentosa* - ipeca - *RUBIACEAE* - MADDER or BEDSTRAW FAMILY

A shrub of over one meter tall, ipeca has round, hairy stems. The broad-oval leaves with tannish central rib and ±paired laterals, measure up to 25cm, are opposite and connected by interposed stipule pairs. Especially the leaf and stipule margins have short hairs.

Twe broad, glossy, fiery-red bracts - green-margined and green-tipped - enclose a group of pale-yellow florets like a dish. Ech corolla tube opens up into five pointed lobes - star-like. Their one creamy style each protrudes beyond the petals while the five stamens reach ± to the lower half of the tube. The brownish calyces and bractlets as well as the florets are hairy.

Eventually, this 'lacquered dish of blossoms' transforms into a 'fruit dish' filled with cobalt-ultramarine-blue berries. These are roundish, with longitudinal ridges, each one containing one seed. Here is an example of some of the tropics' gaudy color schemes and forms. It also reminds of the variety of jungle plants in this large family; compare with *Caffea* - Coffee Tree, *Cinchona* - Quinine, Gardenia - all genera therof. Also, with the delicate charm of some temperate forms, for example *Galium* - the Bedstraws of Europe and America.

The genus *Cephalis* - like many others in this family - is of medicinal value. We found it forming groups in lighter spots of Archidona's forests, in Jan-Feb 1940.

VG *25 - Diastema eggersianum - GESNERIACEAE* - GLOXINIA FAMILY

This jungle wildflower was found near the Misahualli river at

'Dos Rios' in a dark place. It bloomed in February. It is also reported from the province Tungurahua - the valley of the Pastaza and Negro rivers, also in the Oriente.

The plant has shallow roots and a round reddish stem. Its flowers arise singly or in small clusters that bloom consecutively on thin floral stems in the axils of the opposite leaves. The latter are ± oval-rhomboid with widely-spaced, paired lateral nerves from the central rib. They are dullish-green, yellowish on the reverse side, and have crenate margins.

The gracefully-sweeping floral tube sits on the wide-open calyx of five needle-fine 'star-points'.These close when the blossom drops and the fruit begins to mature. The yellowish tube is reddish above - sprinkled on that downward-facing inside wall with brownish dots. It flares into five rounded, white lobes - two above, three below with the middle one wider. Each lobe bears a rose-purple blotch bordering on the soft-yellow interior.

A modest species in the great rainforests and river valleys.

YG 26 - *Hippiella ulmifolia* - *GESNERIACEAE* - GLOXINIA FAMILY

Although this is not a plant of the tropical jungles, it is typical of the densely vegetated quebradas and waysides of the Quito highlands, of the Oriente subtropics, of Otavalo. It should be mentioned here because the Gloxinia Family is largely represented in the tropics.

The often tall round stem is erect, short-hairy and evenly set with leaf-pairs that alternate direction. The spaces in between

them are long, their coloring merging from reddish above each leaf-pair into geenish below the one above. The petioles are short and the leaves nearly circular with obtuse tip. Short hairiness is spread over all parts, and it dulls smewhat the shiny upper leaf surface - rich green,'sculptured' and with in-rolled toothed margin. The reverse side is soft-gray-green - its prominent ribs densely hairy.

Usually, four slender floral stems ascend from each leaf axil. That makes eight to each leaf-pair. The scarlet corolla has a roundish base inside the five-tipped calyx, and a slight 'humpback' where it opens into five lobes - the lower three strongly recurving. The tube's inside is silky-whitish-pink. Two shorter and two longer whitish stamens with creamy anthers open with greenish-gray pollen. The style eventually emerges among the stamens with its downward-directed, greenish to yellow-reddish, hairy stigma. The buds are green-orange, red-hairy.

This lovely red flower is a nearly year-round bloomer.

YG 27 - *Browallia americana* - *SCROPHULARIACEAE* - FIGWORT FAMILY ?
or *SOLANACEAE* - NIGHTSHADE FAMILY ?

Bloominng during Jan-Feb.1940, this charming small wildflower abounded in 'Dos Rios'and Tena, and somewhat less in Archidona.

Its slender light-green stem is round and often variously branched. Its alternating leaves are widely spaced; they have short petioles, are long±heart-shaped, short-hairy and shiny.

The short-stalked blossoms appear singly in the leaf-axils. From each three-pointed, slim, green calyx protrudes a thin

reddish floral tube which opens into a bright-purple flower: its upper portion a notched lobe with a yellow-white blotch just above the narrow throat; its lower portion a broad lobe consisting of eight pleated sections with obtusely-pointed tips. The style and filaments are green. The two shorter of the latter have yellow anthers, and the two longer ones that reach into the throat, violet-red-with-yellow anthers. It would take more minute detail to determine to which of the two above large plant families this baby belongs. Either way, it has many impressive relatives most of us know: foxgloves, monkey-flowers, paintbrushes, or tomatoes, daturas and petunias.

YG *28* - *Bauhinia candicans* - yutsu (Oriente Quetchua),pata de vaca - (Argentina) - *FABACEAE* - BEAN or PEA FAMILY

Although bauhinia is a shrub to multi-branched tree, it simply had to be included: its beauty is impressive. We found one blooming in March-April in a swampy place near Archidona; another fruiting in April 1943 near the river at 'Dos Rios'. These trees may grow very tall.

Certainly, the'cloven-hoof'-shaped (cow foot) leaves and later on, the immense, flat, often to 30cm long bean pods leave no doubt regarding its family. The huge, pure-white flower, too, suggests in a measure the 'butterfly position' of - say - the sweet-pea, known to us all. Here the five slender petals extend upward with ends curving outward, and the ten white stamens and one style forward and upward. I witnessed the opening of the tall

bud on the left of this picture - snap - and the five slender sepals turning backward with their tips remaining joined. Incredibly fast, all features assumed their pollinator-inviting placement. The long 'moon-sickle' tannish anthers have white pollen, and the style has a yellow-green two-lobed stigma.

The tree's individual branchlets are round to angular; the latter particularly so below the leaf axils. The alternating leaves have reddish petioles - knotted at the base, with minute stipules from which clear, sticky droplets distill. The 13-17cm long papery leaf-blades close at night.

We could call this bauhinia a 'great-wonder-bean-tree' of the tropics.

YG *29 - Cassia tomentosa - FABACEAE* - BEAN or PEA FAMILY

Another genus of 'bean-tree' is cassia. This particular one - *C. tomentosa* - is typical for Quito's environs and those of Guapulo.(We have made a quick return to the higher regions of the Andes). It is also natural in India and the Cape of Good Hope. I painted it in Sept.1945, but it had been blooming months before. Flower profusion may also appear early in the year, and that goes for young shrubs as well. These grow into big trees in record time. The trunks are knotted, gray; the branches cork-colored with yellow-green 'fur', and their young parts totally yellow-green. There is a garland-like quality about the branches' ascending, then downward-arching. The leaves are alternate, also in direction. They have generally six to eight pairs of shiny-

dark-green, short-hairy leaflets that are pale-green and densely-hairy beneath, their edges ± in-rolled. A tiny thorn bristles between the segments of each pair.

Three narrower and two wider ± scoop-shaped sepals form the calyx. The nearly round-dish-shaped, yolk-yellow petals are tissue-like and have a greenish stem-like base. The green style protrudes like a hook. The three lower of the ten stamens likewise curve forward; the four central ones are almost straight, and the three uppers short. The filaments are silky-yellow and the anthers reddish-brown with yellow.

The bean pods are first yellow-green, later brown. They are hairy; flattish with transverse wrinkles, containing ±40 seeds.

YG *30 - Oxalis sp. - OXALIDACEAE* - WOOD-SORREL FAMILY

'Wood-Sorrel' is in this case nearly correct, because this species was found in a lighter spot in the jungle, near the river Misahualli at its fording-site - chimbadero - between Archidona and Tena. It bloomed in January. Most sorrels do not grow in woods.

This plant's round main stem, floral stems, and grooved leaf-stems are glassy-purplish-red. The alternate leaves extend ± horizontally in many directions. Their two lateral leaf-segments form a perfect butterfly-shape while the central leaflet resembles a coat-of-arms shield. All are warm-dark-green on top, intense maroon-red underneath. They fold down by too much sun, and at night.

Each long floral stem (peduncle) slims conspicuously toward its apex where usually three to five buds appear. The pale-green calyx has five reddish tips. The 'double' flower has five slender outer petals, and numerous smaller inner ones - all of a rich lemon-yellow.

YG *31 - Ageratum conyzoides - ASTERACEAE* - SUNFLOWER FAMILY

In jungle clearings, along roadsides and in gardens of Tena and Archidona, this delightful herb occurs in masses, blooming profusely in Jan-Feb. Its pompon-like flower heads come in clusters on ± short floral stems in the axils of leaf-pairs, These multi-branched conglomerations of fluffy disc-flowers within their neat cup-shaped receptacles of red-tipped bracts can range from rich-lavender to very pale - even white. This variability is part of the decorative effect as is these small wildflowers' mass appearance.

The juicy, round, dull-green stems are long-hairy, and the leaves short-hairy. The latter are ± obtuse-heart-shaped, broad, dark-green, nerve-textured, and their margins, crenate. The plants remain low.

Many varieties have been hybridized as treasured garden flowers in North America and Europe.

YG *32 - Jussiaea (Ludwigia)sp.* - Primrose-Willow - *ONAGRACEAE* - EVENING-PRIMROSE FAMILY

In spite of its short stature, this delicate plant may send

out numerous branches. In Feb-1940 it abounded in the garden of 'Hacienda Dos Rios' and along waysides. Its resemblance to willows is in the leaves and that it loves wet places.'Primrose' refers to its belonging to the Evening Primrose Family. There is no relationship to true primroses (*Primula)* or willows *(Salix).*

The shiny-red stems are angular with sharp edges. The fresh-green oval leaves taper at both ends, presenting an even 'fishbone'-structure with a red central rib. They are alternate, with one flower in each axil. What looks like a long red floral stalk is really the elongate ovary that contains several rows of seeds after the four tiny yellow petals fall away and the four pointed sepals remain spread open; not folded backward as in the genus *Oenothera* - the evening-primrose proper. The hefty style and stigma are light-yellow; the stamens likewise.

This pigmy in open areas bordering the giant rainforest trees, certainly fills its place with miniature beauty and its role in Nature's economy.

YG *33 - Quamoclit coccinea - CONVOLVULACEAE* - MORNING-GLORY FAMILY

The pleasant resort town Baños (1800m) has the chosen climate of this charming wild morning-glory vine - the shady or sunny hillsides and the banks of the Pastaza River. It bloomed in June-July 1941.

The slender stem with its three longitudinal edges is light-green to reddish, twining among dense vegetation and flashing its alternately arranged, juicy-green 'leaf-arrows' and fiery-orange-

red blossoms. The latter are long-funnel-tubed (inside yellowish), flaring into a five-cornered, flat red part - the five fused petals. A star-design (shiny outside) indicates how the tissue-like flower was folded or twisted in bud. The creamy style with fluffy stigma protrudes above the five pink stamens with their pale-yellow anthers.

With its two tiny bracts,the five-tipped calyx has a claw-like appearance, particularly so when the pedicels point stiffly downward as they enclose the four-part capsule. There are generally two to four flowers to each cluster.

YG *34 - Pseudogynoxis sodiroi - ASTERACEAE* - SUNFLOWER FAMILY

In late June 1941, Baños, we marveled at this 'sunflower-vine' twining about a guava tree (guayaba in Ecuador), unfolding its red flower heads high in the tree's crown. Others of its long, slender, light-green-striate stems crept among luxurient undergrowth and bloomed there below.

The alternate leaves curve backward gracefully, sitting with a broad base on a shortish, grooved petiole. Each blade tapers into a sharp point, has ± in-rolled, toothed margins, a rough yet shiny-green upper surface - appearing 'quilted' because of the three to six lateral veins and their connecting ones near the margins. The central rib is pale-green, and the blade's reverse side pale-green-hairy.

Generally, two floral stems terminate this 'sunflower-vine'.These widen considerably toward their shallow, many-bracted

receptacle. Seen in long-section, the numerous disc-flowers rise candle-erect, with silky-white hairs (pappus), their five yellow, later red, petal-tips, stamens and styles, forming as a maturing unit a conspicuous, brownish 'pompon'. 18-20 slender orange-red ray-flowers radiate from it, usually stiffly downward. They are pale-orange on the reverse side.

Fiery-red is a fairly rare color among wild species of the Daisy-or-Sunflower Family. Pink, purple, blue or white is more common; overwhelmingly so - yellow! And being a climber is a bit different too.

YG *35 - Commelina diffusa - COMMELINACEAE* - SPIDERWORT FAMILY

Because of its delicate beauty and being common in 'Dos Rios', Tena and Baños, this spiderwort species must be presented. Anyone who has become familiar with the large-blossoming commelina (#80) of this chapter, could at first glance consider this one a stunted version. But quickly, many features will focus as distinctive: first of all, the much smaller flower with all three petals cerulean-blue - the one in front just a bit smaller. The outer three segments are sub-equal, pale-blue with a blue margin; these being the sepals, fit in the spaces between the inner. Two of the blue curving filaments bear yellow anthers formed like pendent clubs; three dark-violet ones are dusted with yellow, and the sixth has a pale-yellow tip.(I have no record of a style here, but it is present in all these flowers - they are bisexual).

Generally, only one flower blooms at a time, but a second floral stem - pedicel - hides within the doubled bract which projects from a slender peduncle at the leaf node.

The leaves are smaller too, more lance-like, and the part sheathing the main stem is yellow-green with fine red lines. These run into the red striations of the slender, smooth main stem. Each leaf sheath sports a circle of hairs where it opens into the blade.

YG 36 - *Escobedia grandiflora* - *SCROPHULARIACEAE* - FIGWORT FAMILY

On the steep mountainside opposite our hotel in Baños, the large white trumpet flowers of escobedia bugled for attention, particularly halfway up the slope. This was in June-July 1941.

Growing to bush-size -- about one m high, the light-yellow-green, sturdy, round stems are short-hairy, grooved here and there. When cut, they exude a pungent odor. They are densely foliated from bottom to top. Their tuberous rootstocks extend rubbery, orange roots.

The opposite leaves alternate direction; they are ± sessile, tough-papery and rough, light-yellow-green - dull-shiny above, duller underneath; up to 11 cm long. Five to seven parallel ribs are joined by elegant secondary ones. The blade margins are toothed or knotted.

Pairs of two-bracted floral stems with long, luminous-green, five-pointed calyx tubes rise from numerous upper leaf pairs. From them, the very long, slender, short-hairy flower tubes reach

forward, spreading out their three larger and two smaller, wavy-edged, rounded petals. The corolla's throat is narrow with tiny droplets. The eight to nine cm long, pale-green hairy style with club-shaped stigma remains inside the tube. The four green stamens are fused, two of them becoming free below the others. The long, double anthers are flat, beige and with brown margins. The egg-shaped fruit swells inside the calyx until it splits; it has two valves in two parts each.

This showy flower has a delicate lemon-like perfume.

YG 37 - *Nicandra physaloides* - chamico - *SOLANACEAE* - NIGHTSHADE FAM

A member of the Nightshades and very similar to the genus *Physalis* - the ground-cherries -,this nicandra's species name refers to them. It thrives along the road-banks of Baños, adorning them with its rich-green herbage and showy pale-lavender flowers. Only once - in Aug.1941 - I spotted a plant in our Quito garden. Had we inadvertently intoduced a seed? I could now compare it with *Physalis peruviana*, uvilla (see Chapter 4),a natural inhabitant of our acre.

The outstanding distinction noticeable from a macroscopic view is the entire plant's smoothness, and the shape of the calyx: in bud, enclosing open blossom, then the berry-like fruit, its five shiny intense-green sepal-parts join sides and form sharp crests that terminate in a point. Since at fruiting they turn abruptly downward, the horn-like projections at their base round the flower-stalk's apex, bristle dramatically. It makes a lovely

'lantern'.

All the stems are green and purplish-red-striate,± five-grooved. The variously indented leaves have a sculptured look, their rib-structure usually being reddish at the base; they are ± whorled with a few opposite arrangements. The large flowers come singly,in the axil of a leaf or leaf-pair. The open blossom is ± bowl-shaped. Its five lavender petals become free close to the edge where they flare slightly outward. Around the five white stamens with yellow anthers, the flower's coloring is greenish-white with five purple-blue ± rhomboid blotches. The white style has a five-(or four)-lobed stigma. The other floral parts, too, are sometimes in fours.

Blooming time in Baños was June-July.

YG *38 - Lantana camara - VERBENACEAE* - VERVAIN FAMILY

The area of Baños is home to the yellow-orange-red-blooming lantana shrub, where it is likely to be in full flower in June-July. In tropical Tena it already blooms in Jan-Feb-March. It may well be a year-round bloomer. It is one of the South-American species used for developing garden varieties.

The woody branches send out fresh-green-reddish striate, four-edged, short-hairy shoots with criss-cross-directed leaf-pairs. The oval-pointed rough leaves have mostly a red central rib; the lateral ribs are evenly spaced, paired, and have closely set connecting veins. The margins are finely-scalloped. Their scent reminds of marjoram.

A pair of short-hairy, longish floral stems rise from the leaf-pairs' axils; each one bears a ± rounded flower-head of circularly-arranged individual corollas. These come from tiny, whitish-bracted calyces. The younger flowers in the center are yellow, and those of the outside rings, orange, then deep-red. Each small 'trumpet' spreads into five decorative lobes, one of which is larger and outward-facing. There are four stamens - two inserted a little above the others. The short greenish style persists after the flower tube lets go. The fruits are green-purple-red-black shiny berries, looking attractive in their rounded clusters of bracts.

YG *39 - Quamoclit pinnata / Ipomoea quamoclit* - Cypress Vine / Cardinal Climber - *CONVOLVULACEAE* - MORNING-GLORY FAMILY

In Feb.1940, on the grounds of 'Hacienda Dos Rios' near Tena, I found one single plant of this delicately decorative climber. Its thin, angular, trailing stem clings to the ground or whatever vegetation it encounters. Its leaves alternate and include a cluster of small leaves. Every other cluster sprouts one erect, slender floral stem with one or two flowers. Each leaf is divided into thread-fine segments, giving the appearance of pale-green fish-bones.

The gorgeous, tall, deep-scarlet flower-tube is slender, flaring into a five-pointed star-trumpet. The tube's inside is dirty-pink. It has five pink stamens and a white style. The tight calyx has unequal brownish sepals.

This is a close relative of *Quamoclit coccinea* from Baños YG(#33) and is grown in parks and gardens in warm climates.

YG *40 - Siphocampylus jamesonianus - CAMPANULACEAE* - BLUEBELL FAM

On the mountainsides above Baños, this semi-shrub is common. Its numerous, shiny, dark-red-purple,± one m tall, straight, round branches appear greenish-gray towards the top, because of a longitudinally-streaked, felty covering; they contain a white, milky juice.

The two to seven cm long roundish-oval leaves are closely whorled around the upper portion of the sturdy round stems; their upper surface is shiny yellow-green to purplish-black, sculptured, and with slightly in-turned,± crenate margins; underneath they are fuzzy-gray. The short petioles are curved at their base.

From each leaf-axil ascends a five to seven cm long, slender floral stem - also clad in 'felt'- usually greenish-white. The calyx of the same color spreads its five sepals wide, showing the pale-yellow corolla's rounded reddish base, its slight constriction and bell-shaped upper parts becoming free as five pointed, recurving petals. The flower is bi-laterally symmetrical, pointing forward with the stamen-column, its fused brown anthers and two-lobed, light-green stigma facing downward, close between the two upper petals. This irregular bellflower is often streaked or sprinkled with soft-reddish; or its five lobes totally colored brick-red. All the sepals and leaves sport

reddish or purple tips.

The genus *Siphocampylus* is common in Ecuador with dozens of species. (Compare YG #24 - *S.giganteus* in last chapter).

Chapter 2:

A RIOT OF ORCHIDS

Chapter 2

A R I O T O F O R C H I D S

To come upon one's first blooming orchid in the vast rainforest must be a dream of magic fulfilled - probably in any botanist's, gardener's and artist's life. The realization that there are approximately 18,000 or by now many more species in the Orchid Family, and that jungle plants generally occur singly or in small groups - often far away from others of their own kind - works like a tonic: the discoverer wants to capture his treasure; to paint, draw, photograph, or record it in writing. He feels it must be rare...

So here we are bumping along in an antique taxi stationwagon, the driver encouraging the vehicle with incomprehensible Spanish utterings. All of us hope and pray that no flat tires will develop or the gas run out. Meanwhile, I dream of what I will find upon arriving - where? Father and my uncle Walter point out breath-taking mountain views through spaces between the leafy jungle trees as we round curve after curve of the barely two-lane dirt road through the subtropics of the Occidente to Santo Domingo de los Colorados But we don't plan to ride this far. Besides, the road is closed just beyond km 72...

So here we are now: my parents, my aunt and uncle, my sister Dora and I. It's the very first time we've donned our jungle garbs including tall boots and have left the safe familiarity of

our Quito home (that is - Mother, Dora and I). We have come to a stop caused by a landslide blocking the road on this first trip to Saloya: a glorious area for today's goal. Almost like dream-walkers, we tumble about the road marveling at the masses of rich green foliage all around us. On the left side, tall forest trees from way below on the sheer slope all look different from each other, while on the right, the equally steep road cut is studded with plants of all descriptions - green gems in mosses and lichens. To my delight, I quickly spot tiny, glossy pink fungi, apparently in symbiosis with the silver-gray lichens. Here and there,they form patches of this misty color combination. It is plain how they thrive in the warm humidity. I have always been fascinated by the fungus world. Having grown up in the German forests with their then super-abundance of colorful mushrooms, I feel an attraction to their fairy-world...

Then suddenly, I am face to face with an incredibly foreign-looking flower- I am almost 'lightening-struck': from the mossy road bank it stretches its candy-striped stem with a pendent cluster of silken-brown, heavenly-scented blossoms towards me. An orchid! It is hard to leave it when Dora calls excitedly,"Look at these rose-red wild nasturtiums!" Father beckons,"Come! I found something absolutely exquisite - - come quick!"

So it goes. We rush from one side to another. Every family member discovers something special, none of the like any of us has ever seen. Even the taxi driver becomes somewhat incensed with our enthusiasm, "Que hay, señoritas?" (Taxis in those days were dirt-cheap and the only way of transport for day outings

when you had no car of your own. In Quito we used the buses). Amazed we stare at the lianas hanging from the towering trees; we listen to imaginative bird songs; we feel a closeness to such magnificence - almost as if we were actors in a play staged here.

Presently, the precious orchid with ist silken flowers quietly claims my attention again. Its bewitching perfume spreads irresistable magic that draws me to it time and again. I feel an awe of its uniqueness. It would seem like a violation of an unwritten law to think of lifting it off its perch or cutting it. Although orchids are perennials, therefore will return from their roots, I perceive this as a silent lesson from this virgin habitat: everything is in its place - for a purpose. Let it be!

Right then and there I decide that I simply m u s t return to this 'fantasy forest'- armed with the needed equipment to portray in watercolors as many as possible of these exquisite, astonishing, or even grotesque flowering plants, and that I will focus on the 'small fry'. The very large, eye-catching species have most likely already been depicted by those early explorers and botanists and their illustrators, and more recently, by my contemporaries.

Over and over, I return to that unobtrusive yet splendid orchid, hanging out its perfumed nectar-rich gift cluster to thirsty hummingbirds, eager bees, or - whoever will be rewarded by becoming the right pollinator. This flower has set the seal on my decision to devote myself to this work.

Plants in the jungle depend heavily on various creatures for pollination as well as seed dispersal. Wind pollination can

hardly take place in the lower portions of this damp habitat. Only along the carved-out road channel it could perhaps function for some smaller plants. Nature has designed orchids in a way that makes self-pollination impossible - to preserve genetic wholeness - and calls for the help usually of a very special insect, bird, or bat. This is the reason why orchid blooms have a very long life span - maybe two months or much longer. The likelihood of the right pollinators to find such widely scattered solitary specimens is thereby increased. Once pollinated, orchid blossoms form capsules with innumerable tiny seeds. Yet their dispersal meets with many difficulties.

Orchids, also known as the'Royal Family'of flowering plants, could also be called 'long-range workers' in the plant kingdom. About half of all the known species live on humus, and the other half as epiphytes: resting on the mosses and bark of living or fallen tree trunks without taking nutrients from these hosts. Somehow, the incredibly showy kinds - desired by orchid growers and money-hungry orchid poachers - choose locations often high just underneath the canopy, for the right amount of light and - protection, as if they knew of many threats. But occasionally, they will appear surprisingly low on a mossy trunk, commonly near a great river where sunlight can touch them...

So it was that upon my first described tour to the Oriente, Father and I were fortunate to be able to j u s t reach the flowering stem of the spectacular species *Oncidium papilio*, the copper-red, yellow-mottled Butterfly Orchid. Its long slender leaves had to be left in the crotch of its gorgeous host tree. We

didn't feel too guilty about cutting it because we discovered several other plants of this species perched well above us and safe! It must therefore be a fairly common species - at least at that time. Later on, I found a fine illustration of it in an excellent old German botany book (by Dr.Karl Smalian) we acquired in Quito. What joy to bring it to the bright little guest house where we stayed and set to work capturing this treasure...

The moment I have a subject to portray, I feel deeply content. Although drawing with pen and ink has its problems in the hot tropical humidity - the ink tending to run - I press on. The paper's poor quality, too, is no help: only one kind of cream-colored illustration paper is available in Quito (during World War II). Occasionally my fine pen draws a 'snag'. Yet, I counted my blessings, especially in Dos Rios, because of the screened windows of the guest house which kept out mosquitos and excess dampness. Not so in Archidona where we had begun our Oriente experience.(Chaper 1)

When we return to Quito, orchids again come to our attention - many being ground orchids that need no support from trees, but grow on mossy slopes by waterfalls or under shrubbery in quebradas. Most of these are inconspicuous, yet fascinating. There must be countless more species than we have found on our wanderings. The tantalizing figure of 18,000 orchid species all over the world makes us feel grateful for each tiny one we encounter.

At last, my dream to again experience the Saloya rainforest becomes reality. We stay three weeks allowing me plenty of opportunity to sit in the bright rustic cabin drawing and watercoloring while the rain pours down relentlessly or swirling mists make the mad-green world drip and swim. Each day, a new flower, preferably an orchid, is in front of me, posing. I also find paintable mushrooms I cannot resist. Variety is no problem here. Meanwhile, Father challenges the weather, painting oil studies of the jungle's glorious vegetative patterns. Most mornings offer us some sunshine, and I, too, paint a few small forest oils. When we set out with our paint gear, we have already in mind picturesque scenes we have mentally collected on our daily expeditions. Our choice of motif now depends on the most intersting lighting as well as w h e r e we can settle comfortably to do a good job. I find it is good to do both - the botanical detail I work with indoors, and the broader field of landscape on the spot outdoors.

Father has with him a fine small Voigtlaender camera. Weather permitting, he brings it along and captures moments of special meaning which we couldn't ever paint fast enough. Photography is for that! The results are what then were considered good pictures in black and white. (± in 1940).

Today he wants to capture the beautiful effect of the tree ferns delicately silhouetting in enveloping mists. He has his camera, but no tripod. It is so dark that he must use time exposure. We look around us and - oh joy! - find all parts required for a primitive improvisation: a forked branch, a

straight one with some width and flatness on one end, and - an empty oval sardine can by the roadside. We assemble these pieces with the sardine can on top to hold 'legs' as well as camera, and Father is in business with a jungle tripod. (Yes, littering has already started on that virgin terrain, but in this case it is helpful).

All this shows how blessed we are to have this narrow main road as access to various viewpoints of this mountainous habitat- so densely forested. The narrow trochas (trails) alone wouldn't have offered many lookouts; only perhaps where a great tree has fallen, creating an avenue of open space and light. And since we are not an actual expedition of students or scientists prepared for difficult situations, we make the best of our time by using this road. It is so private that one or two lumber trucks per day may pass; more often none for many days. And certainly no people. Thus we artists own it - and how we love it!

It is on this road or very near it that the small and wonderful orchids wait for me, commonly along the mossy banks, some even among great rocks. All epiphytic orchids have white roots that spread through the mosses and cling to supporting rocks, logs, or living tree bark. They are self-sufficient in that they take in moisture that comes as mist or rain. Whatever nutrients may be dissolved in thus accumulated water - perhaps mulch or tiny animal deposits - they absorb. No food is taken from their supporting tree. And during a dry spell, the white, perforated, outer layer of such roots - made up of dead cells - forms a protective layer which resists heat and reflects light.

Orchids often have succulent, leathery, or waxy leaves to prevent desiccation during possible drought spells; they are simple and smooth. The stems tend to be wiery, often sectioned with nodes.

The flowers come singly or in long spikes or clusters, erect or pendent. It is hard to imagine a wider variety in form, color and design than this great family displays in its blossoms: They may be absolutely formidable as in the genus *Cattleya* or *Paphiopedilum*, more open and graceful as *Dendrobium*, butterfly-like as *Oncidium*, spidery as *Brassia, Odontoglossum* or *Maxillaria,* or bizarre as *Masdevallia* or *Porroglossum. Epidendrum* and *Cattleya* are typically clustered.

These are just a few examples and include species used and hybridized in horticulture. No matter how different from each other all these thousands of orchids are - they have these things in common: the bilaterally symmetrical flower consisting of three sepals, three petals of which one is very different - usually large and ornate or forming a pouch-like structure; the amazing 'column' made up of all the reproductive parts - one to three stamens, style and stigma, rising from an inferior ovary. The flower has the peculiarity of a twisting stem. This brings the showy larger petal or 'lip' to the top while it started at the bottom when first opened. Sometimes the lateral petals and sepals lean together to form a sort of hood over the column. The possibilities of fantastic formations are infinite...

Surprises always await us.

Chapter 2 (R):

ILLUSTRATIONS

Chapter 2 – Red (R)
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(Orchidaceae)
Oncidium iridifolium

78



- "Dos Rios", Tenn - Entire. Trop. - On "Pilche" tree before moss. Numerous specimens - In bloom & fruit in April.
- Bunch of hard, fleshy, neatly ovate leaves, whose apex is cleft.

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(Antirrhinaceae)
Stelis

R 3

187



"Dos Rios" - Tena, Oriente - Tropical - Blooming in April

- Tip of leaves split in 3. Leaves up to 11 cm long, their striation showing clearly.
- The hair-thin peduncle is spike-like.

(Orchidaceae)
Stelis atropurpurea

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R 4.

188



- Archidona & "Dos Ríos", Tena - Oriente. On tibina trees like "Pitche" (Calabash) & Accacias. Quite common.
- Leaves thick-fleshy.
- Flowering stems 1-3. Flowers on spike 3-14.

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(Orchidaceae)
Rodriguezia secunda R 5
(det. Wm. Dressler, Smiths.)

79.



- Habitat: Central America. Tropical jungle - Cultivated in Hawaii.
- Woody root system many exposed, between which - numerous bulbs clustered together. Peduncle beside bulbs - leaflets towards inflorescence.
- All parts of flower extremely heard. Delicately fragrant

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(Orchidaceae)

192



- "Dos Rios", Tela, Honduras. Terrestrial - On "Pitche" tree - In bloom - April.
- Psuedobulbs flattened ovoid clasped by 2 sheaths, each bearing one large leathery leaf, folded tightly where it emerges, reflexing beyond. Base spreading rounds apex.
- Peduncle beside bulbs
- Flower's scent jasmine-like, but not too strong.

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(Catharina Maria Barnas)

(Orchidaceae)

rufescens Lindl.

Maxillaria ~~macrobulbon~~ ?

186



Tropical.

- Tall, erect, growing in canyons, but having been brought from Guatemala, at slightly higher elevations. Grows on trees.
- February
- Very prolific in producing new pedicuncles. Each flowering head is supposed to bear blossoms for one entire year.
- Supposedly rare.

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94.



- [illegible] Tropical
- [illegible] April, in bloom.
- Leaves slender, green, basal.
- Stems very tall, flatly arched, and arching so that flower appears to be suspended.

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(Catharina Maria Barnas.)

[illegible] K 9
Oncidium papilio


CMB.

- Archidona - Oriente - Tropical jungle - Dark place on mossy branch - Solitary - Blooming in January.
- Leaves upto 35 cm tall, peduncles only 10 cm. (this is half petiole, half blade)
- The petioles emerge from dark-green, sack-like bulbs, surrounded by brown sheaths.

(Orchidaceae)
Maxillaria ringens R 10

82

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(or way to Cricute)

- Texas Gulf Coast - Also found in Papua New Guinea, Indonesia, New Caledonia (below Indonesia). February - May
- Leaves leathery. Up to 3" long, sharply keeled.

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(Orchidaceae)



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131.



- Foot of Pinincha - On wet, mossy bank above acequia - March - Forms thick clusters of 15-20cm tall "pads of petioles".
- Flowers singly or paired reposing on a hard, fleshy, mat-"glossy leaf, abruptly "turned" downward from petiole.

(Pleurothallis)

Pleurothallis

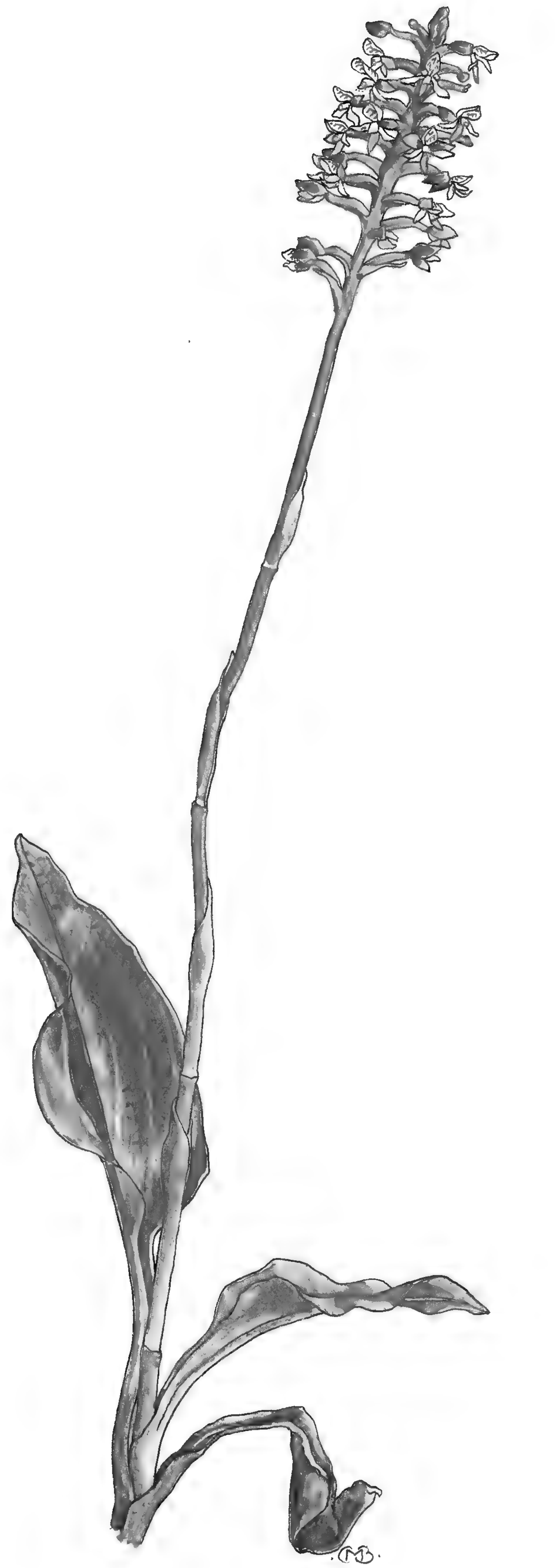


- Near Quito. On very steep, dry quebrada walls - All year round.
- Frequently, roots and young leaves develops in one of the upper nodes. The new plant drops off and usually finds foothold somewhere lower in the quebrada.
- Flowers a much more brilliant magenta than I was able to achieve with my water colors.

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(Orchidaceae)

maigua



- Expressed Quito - Orchid -

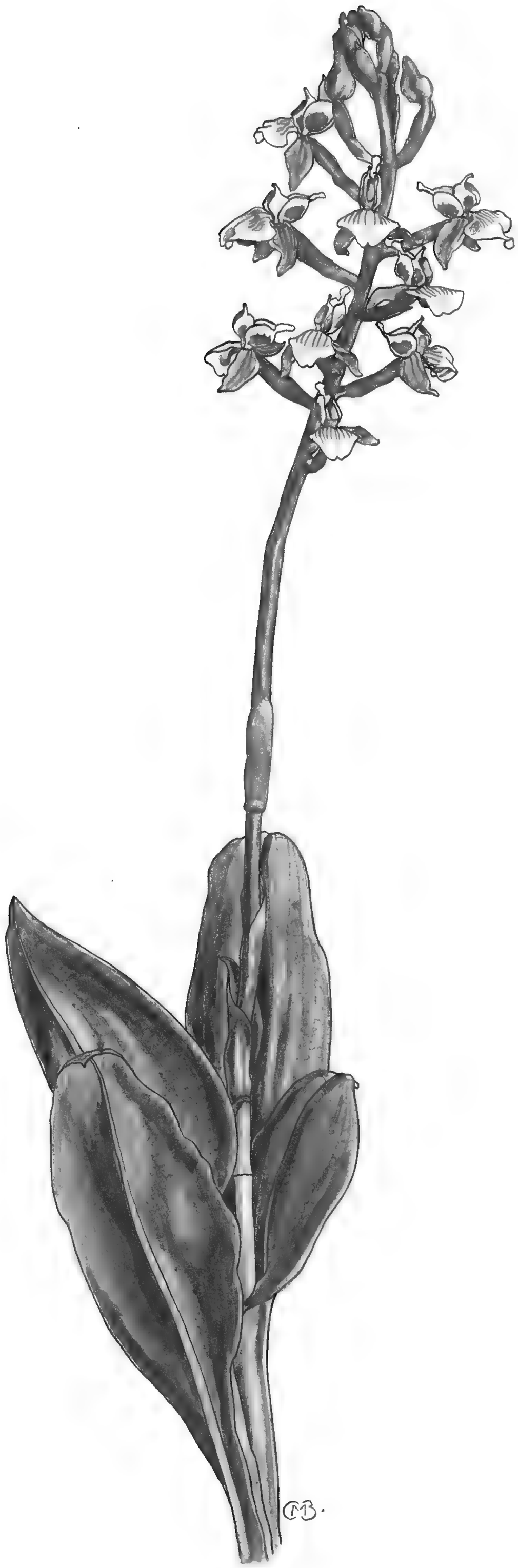
(Orchidaceae)



- Near Equator monument - where vegetation begins to be less airid - Our humid, mossy, shady bank. 5 of April.

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(Orchidaceae)
Pontheiva



- Always close to Agave americana - on slopes near Quito - [illegible]
- Leaves of silky sheen. Buds shortly-pubescent.

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(Orchidaceae)
Pontheiva ?

R

108.



- Near Quito - toward Cruz Loma; also below Quito on slope above Guápulo and in quebrada way below.
- In bud in Oct. - in bloom in Nov. - in fruit in June.
- When in large number, the delicious scent permeates the air.
- Leaves very glossy - their backs yellowish-dull-green.

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(Orchidaceae)
Stelis or
Pleurothallis



- Plain species [illegible] growing close together - On steep rocky roadside - Salvia - at 1 3000 ft - in groups.
- Aloe.
- Leaves of larger species leathery - [illegible] glaucous (Acacia sophora).
- Leaves of smaller sp. narrower and fleshy -
  Flowers similar, very pale yellow and less fragrant.

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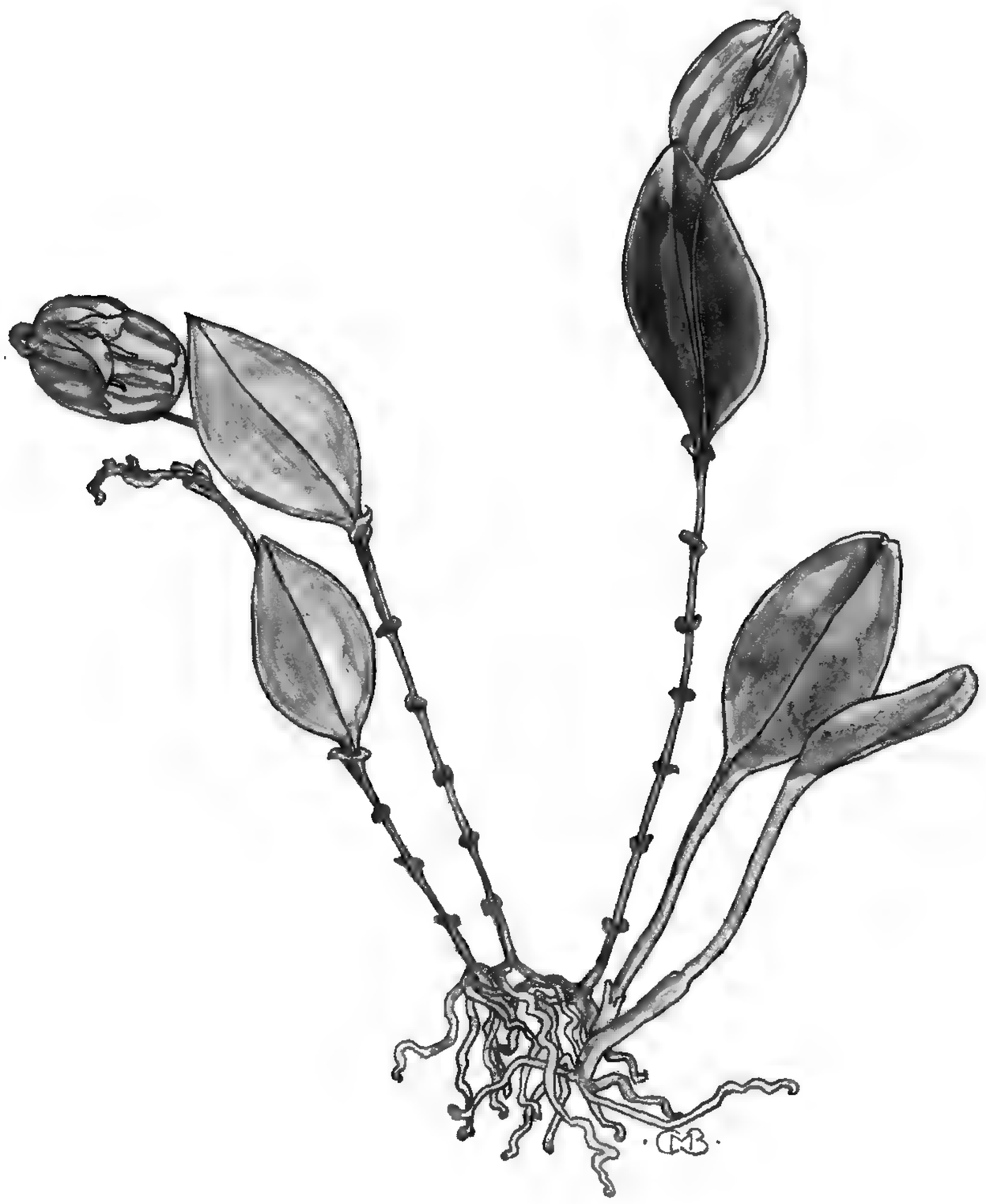
Occident.

- Salonica i Macedonia, 1850 m. ; entstanden durch
Umbau [illegible]. Also um 1400 m, neue Kirche an
derselben Stelle.

(MB) (C) 9/13/D.

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(Classical)
Wasserversorgung



- On dead logs, among moss - Semi-tropical jungle of El Salvador, Occidente - 1500 - 1800 m. - August - October.

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(Orchidaceae)

Pleurothallis (?) Leonis ? forma

(det. Lem. Dressler ? 1984)



- On fallen logs - Sarawak jungle - [illegible] ± 150 m
- Sept., Oct.

(Cucurbitaceae)
Neoalsomitra [illegible] Perroteauxii
(Gaud. Billiard. ex Baill.) Sivar. & Hut.

(M) [illegible] 7/B3p.

(45) 37



- clear. Tip of stipe flat, [illegible] - Sarga - Leeds
- Cap fulleri, margin lobed in dark spots. Stipe [illegible]

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(Agaricaceae)
Maxillaria

Chapter 2 (R):

PLANT DESCRIPTIONS

R *1 - Oncidium pusillum - ORCHIDACEAE* - ORCHID FAMILY

This precious miniature orchid decorated the trunks of calabash trees - pilche trees - at 'Hacienda Dos Rios' near Tena, Oriente. Being generally low-branching, these trees provide room - at our eye-level - for such delightful epiphytic tenants.

The plants' greenish-white roots are long and thin, fastening each leaf-fan firmly to the bark, entwined with mosses. The pale-green leaves sheathe each other at the base, including the thread-thin short floral stems. These barely extend above the fan's leaf tips.

We found blooming and fruiting plants in April 1943.

The 1.5 - 1.8 cm long, fantastic, soft-yellow flower has pale-reddish markings at the base of the two small round 'wings' and the wide, cleft lip (usually pointing upward). It has one red-brown stamen on the pale-yellow column.

The elongate, light-yellow-green, shiny fruit has three longitudinal edges. In cross-section, it is a distinctive triangle.

R *2 - Oncidium iridifolium - ORCHIDACEAE* - ORCHID FAMILY

A resident, often on citrus and calabash (pilche) trees, this baby iris-leaf oncidium came to my attention first on the trunk of a coffee tree. It was in Archidona in Jan 1940 and had both flowers and fruits. It was then equally common around Tena.

Its name aptly describes the iris-like leaves - both in shape

and arrangement. They form a fan with their broad-lance-shaped blades which also enclose the lower portion of the short flowering stems in tight-fitting pockets. All the leaves are rich-green with dull-orange margins.

The 2.2 cm long, intense-lemon-yellow blossom appears large for this flattened plant's small size and its short floral stems. The flower's cleft lip is bordered with a richer yellow. Its 'heart' is variously lobed and partially pin-dotted with soft-red. Stronger red markings adorn the upper (lower, because of the stem's twist) fanciful three lobes.

This baby fan-orchid is slightly larger than the previous - *O. pusillum* - and its capsule is distinctly rounder and in cross-section hexagonal instead of triangular.

R *3 - Stelis sp. - ORCHIDACEAE* - ORCHID FAMILY

Once again, the ancient pilche or calabash tree at 'Hacienda Dos Rios'held treasure for my miniature orchid collection; in April 1943, I couldn't help but draw my new model; the larger orchids took great effort to obtain. This was at hand and worthy.

Its wavy roots hold fast to bark and mosses. From them arise a cluster of perfect-oval, hard, fleshy leaves, terminating in two fine tips each, and unfolded from slender petioles (leaf-stalks). The central rib only shows like a crease on the fresh-green, silk-sheened upper surface. Underneath, the color is mat-green.

The floral stem is hair-fine, often forming a short zig-zag inflorescence. But mostly, there is one flower blooming on each

peduncle. This is connected to the base of a leaf. Leaves and floral stems are ± equal in height - two to five cm.

the seven to nine mm long blossom looks triangular, but has one larger segment and two smaller ones, often fused to form a tiny basin. These parts are dull-maroon-violet, the diminutive inner parts reddish and greenish.

The three-valved, glassy-green to tannish capsules are elongate with straight sides, a bit wider towards the top.

R 4 - *Stelis atropurpurea* - *ORCHIDACEAE* - ORCHID FAMILY

The same 'jewel tree' - the old calabash tree in 'Dos Rios' which hosted #3 -, offered this very similar yet distinctive orchid for my portrayal. It captivated me particularly because it looks related.

The leaves of this one are larger - up to eleven cm long, with more pronounced parallel venation, and being rather high-glossy above, whitish-green on the reverse side, and terminating in three tiny points. Several erect floral stems may arise from within one neatly-sheathed leaf-base. The inflorescence is in ever shorter nodes, alternating, but not in zig-zag.

The individual blossoms are similarly shaped as in #3, are larger, rose-maroon-shiny, with green-tipped margins. The inner arrangement is glassy-pale-green, inconspicuous.

This family presents us with no end of enigmatic formations.

R 5 - *Rodriguezia segunda* - *ORCHIDACEAE* - ORCHID FAMILY

R
(5) A common dweller on the trunks and smaller branches of mimosa and calabash trees, *Rodriguezia* attaches its aerial roots loosely to these host trees. It grows in darker as well as lighter exposures in the partially cleared vicinities of Archidona and Tena. We found it blooming in Jan-Feb,1940.

From a rhizome-like base, it grows gracefully-curving, succulent leaves of slightly bluish cast; they are slender and terminate in a point.

One to three wire-thin, distantly bracted floral stems proceed from the leaf-base where scale-like sheathing gives a braided appearance; they generally develop in succession. Each one bears three to fourteen rose-pink, silk-sheened blossoms, set in two rows. Each flower has a soft-pink, slender, sweeping pedicel enclosing the inferior ovary. The two upper sepals form as it were horns. All segments reach forward, the lower somewhat upward, and surround a small white pouch.

I am delighted with this elegant small orchid.

R *6 - Catasetum sp. - ORCHIDACEAE* - ORCHID FAMILY

The woody root tangle of this robust orchid lay nearly totally exposed, but for the surrounding mosses, on its perch - in this case a tall tree stump in the dark rainforest of Archidonna. Of the numerous tightly-packed bulbs, this one only had sprouted a blooming floral stem. I must portray it!

The conspicuously-parallel-nerved leaves give an almost

pleated appearance. They are broadly lance-ovate, gradually expanding from each others' sheathing base and the bulb. Their inside is yellow-green dull-shiny, their outside (reverse) pale-green, variously blotched with purplish-brown.

Floral stems sprout from beside the bulbs; they are shorter than the taller leaves; round, delicate green and sectioned with yellowish sheathing bracts; widening towards the top where they support one or two blossoms each.

The flower is a 'lady's slipper'-type, but waxy-hard, and certainly of a distinct genus from the temperate-climate *Cypripedium*, which is a ground orchid. The elgantly sweeping, long,grooved ovary-stem is a lovely green. The three sepals are pale-green with reddish splatters towards their margins and tips. Two petals and the column are sap-green.. The pouch-or-slipper-like lip is shiny-green with golden inside; it is so solid that it could hardly be crushed (if one had the inclination to try it). This orchid is delicately scented, no doubt to attract its very individual pollinator. Many of such secret ways are gradually being revealed to scientists...

R *7 - Maxillaria rufescens - ORCHIDACEAE* - ORCHID FAMILY

Another calabash tree at 'Dos Rios' offered this startling orchid for a picture. This being a rather large plant with leaves 20-40 cm tall, it looked somewhat unbalanced with the floral stem so short and its flower spectacular. It was in April 1943, and we never saw another one like it on all our jungle ramblings.

The pale roots spread richly over the tree's bark, interweaving with moss. They grow many roundish, yet ± flattened, deep-green bulbs with longitudinal folds and horizontal wrinkles. Each bulb sports one long, broad leaf, likewise crisped, and mostly sharply folded to ± half-way where it opens up but usually remains centrally creased. Two or three parallel nerves may be prominent on the inner (upper),± reddish-mottled, yet dark-yellow-green surface. The other parallels are barely visible. The outside (reverse) is dull-green.

The flower emits a faint jasmine-like perfume. The three sepals are broad, glassy-lemon-yellow, striate: the laterals curving outward, the top one ± roof-like; their margins are reddish. The two upper petals are narrower, without the red edge. The lip is yolk-orange speckled with maroon-purple. It sticks out like a broad tongue with two lateral lobes. In its center toward the throat lies a pale-yellow, velvety-looking strip of tiny drops of liquid. The column leans forward under the 'roof'. It has the stigma and what looks like two smaller and two larger glassy-yellow stamens. Its color is whitish-green with pin-point crimson dots.

R *8 - Epidendrum ybaguense - ORCHIDACEAE* - ORCHID FAMILY

Here is a supposedly rare species. Some friendly Indians presented it to me, from a garden in Tena. It had been originally collected in the deep, dark, tropical jungle. Rare or not, we saw a blooming plant of it on a mossy forest tree on Guacamayo, at a

loftier altitude, on our return trip to Quito, in Feb.1940.

This 'everlasting orchid' keeps growing new flowering stems which are said to continue blooming for a year or more. This may indicate that the needed insect or other pollinator has a hard time finding its protégé. Besides, the gorgeous flower-head expands and continues to unfold its 'summit-buds'. We can see that some flowers have dropped away below, and at least one shows a swelling capsule. Fertilization completed!

Each luminous-orange corolla of five ± equal segments and a fringed, lobed lip above, with the yellow, red or greenish tube-like column, is fanciful if not very large. Each extremely long ovary clearly shows the graceful twist, so typical of an orchid bloom. The glory is in the densely-compound head.

The main floral stem is slender and round, sectioned with long enveloping bracts, and simple, alternating leaves. These are a rich green, leathery and without conspicuous parallel nerves. They clasp the stem to about half-way.

For any color-conscious person, these four: maroon, tan, emerald and orange, truly sing together!

R *9 - Oncidium papilio* - Butterfly Orchid - *ORCHIDACEAE* - ORCHID FAMILY

What a find on this our one-km-walk beyond Archidona's small plaza: a butterfly orchid's incredible flower swaying above us from its host tree! Here was a truly splendid large orchid. It bloomed in March, continuing through April,1943.

From a tuft of slender green leaves rises a very long, flat,

leafless but sectioned floral stem, bending as a graceful arch with the 'butterfly' in animated suspension.

Its three ± nine-cm-long, upright sepals - yellow-gold with purplish patterns - could be likened to feelers. And the two curving lateral petals plus the large circular 'narrow-waisted' lip suggests a butterfly indeed. The column with all its intricacies, however, awakens in my imagination the replica of the helmeted, fringed and ruffled outfit of an extra-terrestrial being - the petals then of course being parts of the whole.Seen up close, the entire miraculous blossom is fashioned of tiny bladders that effect the silken sheen. This species is wellknown.

R *10 - Maxillaria ringens - ORCHIDACEAE* - ORCHID FAMILY

In Jan.1940,we had a 'one-time-only' encounter with this species: a moss-decked branch of a great tree in Archidona's dusky rainforest was its perch, near the Misahualli river. In the solitary leaf cluster, its three blooms seemed to silently reach for their special pollinator. Instead, w e were attracted to admire its artistic merits.

The tall leaves reach ± 35cm, ± half of which consists of their central rib as petiole, continuing through the rich-green, smooth, ovate blade to a gradual point. They are firm, yet not thick-fleshy. Each leaf proceeds from a somewhat flattened egg-to-bag-shaped, dark-green bulb. Between and around these are fragments of tannish, splitting enclosures.

The floral stems ascend separately, resembling crab-limbs in

their sectioned design. Each segment is slim and purplish below, creamy in the middle, widening and soft-green at the bracts' pointed apex; all this with a glassy finish. These flower stems are ± ten cm tall, reaching ± to the beginning of the leaf blades, therefore looking short beside their foliage.

Each blossom's six segments are soft-silken-yellow, tinged with reddish. The lip is somewhat broader, and the column has two red flecks around the two indentations at its top, and reddish striations on its sides. All parts curve upward, giving an insect-like appearance. The reproductive parts seem tenderly concealed. Are these flowers designed to mimic the creature they need for propagation?

R *11 - Oncidium nubigenum (cucullarum) - ORCHIDACEAE* - ORCHID FAM

Here is a highland orchid from a Quito garden. We also saw it abounding at the even higher altitude of Papallacta, where it graced many moss-and-lichen-decked trees near the hot springs. It bloomed in Feb-May 1943.

The firm lathery leaves reach up to 30 cm; they are wide-lance-shaped with a distinct central keel, while the numerous parallel nerves are inconspicuous. The upper (inner) leaf surface is a rich yellow-to-bluish-green, dull-shiny. The reverse (outside) is delicate yellowish-green.

The dark, slender flowering stem appears from within the leaf cluster. It is bracted at each zig-zag turn, often richly branched above. The individual floral stems - each enclosing an

ovary - are long and curving, presenting the blossoms' modest yet gorgeous sepals, petals and column. Their outside is brownish-greenish, with a rosy touch. The broad, slender-based lip is muted rose-lilac with red-purplish speckle design. Dignified colors, set off by the yellow-gold of the 'inner-sanctum'.

R *12 - Elleanthus capitatus - (Evelyna) - ORCHIDACEAE* - ORCHID FAM

This is a terrestrial orchid whose rootstocks form clusters of stout, 30-40 cm tall, leafy stems. They are frequently seen on quebrada rims and slopes of Quito's habitats. The main blooming season, however, seems typically during Jan-Feb. I conjecture that hummingbirds must be their pollinators.

The leaves surround each stem in alternate pattern - the lower ones being the longest. They clasp the stem somewhat and run down below each node. They look stiff because of the parellel nerves' conspicuous 'pleats'. They are shiny-yellow-green on the face, dull on the reverse side.

Atop each leafy stem unfolds a thickly-bracted, sizeable head of fairly small, but bright-violet-rose flowers.(Unfortunately, the watercolors then available did not allow such brilliance).

An individual blossom consists of three wider and two slender, ascending segments which fit tightly against the dish-shaped lip. Within are two clusters of four club-shaped, blue-green to pink-brown stamens (un-orchid-like?) with the stigma on the white, pinkish-based column. The long inferior ovary is invisible because of the many flowers crowded together inside the

enveloping bracts of the flower-head, plus those pertaining to each blossom.

R *13 - Pleurothallis sp. - ORCHIDACEAE* - ORCHID FAMILY

We thrilled at discovering thick clumps of this *Pleurothallis* - 'Many-stems'- on a shady, moist, mossy slope above an acequia (small canal) from the 'Pichincha Gap', about eight km upward from the Carolina stop on the Quito plateau. It was March 1945.

Stems 15-25 cm tall, slender, brown and sectioned, rise close together from pale, curly roots, which anchor the plants in and underneath the loose moss carpet. Each stem bears one leaf at an angle - flag-like - but flat-side-up. Most of these leaves are fairly equal in width all the way from e heart-shaped base,others more gradually tapering; all ending in a cleft tip. They are shiny sap-green above, pale-green and duller underneath. They have a distinct central crease; are 7-11 cm long, thick-fleshy and hard. Each presents one or two maroon-purple flowers as if on a tray. These small but decorative orchid blooms with slender wing-like lateral patals, are shiny on the outside, somewhat lighter on the inside and with yellow-whitish spots at the petals'base.

R *14 - Epidendrum secundum* - maigua - *ORCHIDACEAE* - ORCHID FAMILY

Maiguas may be found year-round on the rim and vertical drops of quebradas around Quito. They are drought-resistant with their

succulent stems and leaves, and eye-catching with their brilliant magenta blossoms.(My watercolors could not do these latter justice).The huge fruits on long, thin floral stems, likewise, catch the eye: they are glossy-dark-red-violet, greenish toward their tip; three prominent, crimson ribs and three lesser ones in between prove their capsule-nature.

The thick rose-red stem is light-greenish-yellow below each leaf-axil. The leaves alternate in a stiff pattern. They are yellow-green, the older ones with purplish-red margins.

The flowering stem proceeds from the lower parts, is slender, gray-sheathed, purple below the nodes. The flower head is more open than in *E.ybaguense* (#8)from Tena, but the individual corollas are shaped much the same, magenta instead of orange.

Frequently, this orchid grows roots and fresh leaves at one of the upper nodes, thus forming a baby plant, which soon lets go of 'mother', dropping to its very own new habitat below in the canyon. This method of propagation could have been prompted by each year's six months of drought, during which seeds don't have the best opportunity to germinate. Mother Nature is practical.

R *15 - Cronichis sp. - ORCHIDACEAE* - ORCHID FAMILY

This charming small ground-orchid was not uncommon around Quito during our residence there: 1936-'45. It chose to grow companioned by other small herbacious plants and agaves on hillsides.

The stem is sectioned by clasping alternating bracts; it bears

a longuish flower spike of miniature blossoms. Each long floral tube containing the ovary is soft-yellow, subtended by a light-green bract. The three sepals are light-green. The two lateral petals are white, while the broad lip is also white but decorated with turquoise tracery; it forms a small awning above the column. If these blossoms were large, they would be sought after by orchid fans; they are exquisite.

The leaves are basal only - few to each plant; each half-clasps the stem or opposite leaf with its petiole, which widens markedly into a broad, silken-sheened, moss-green, ovate blade, tapering to a point. Only the mid-rib is defined.

R *16 - Pontheiva sp.- ORCHIDACEAE* - ORCHID FAMILY

The end of April 1940, we came upon this attractive small terrestrial orchid a few km beyond the equator monument. Here the vegetation began to be richer, forming shrubby stands on moister ground. It grew on a shady, mossy bank.

An elegant rosette of broadly-ovate leaves forms the base. Each muted-green leaf has a beautiful silken finish; the central rib makes a thin line in the upper surface, while the other parallel nerves merely show as widely spaced striations following the graceful outline.

The low floral stem is sheathed with alternate, soft-green bracts. This pattern continues with the individual flowers. These are creamy when in bud. The open blossom is pure white, forming as it were a dish with an attached open lid - both parts

consisting of three conniving segments each. The column's large, glassy-yolk-yellow stigma sits above a white pouch-like structure ending in a short spur. The longish ovary is soft-green and short-hairy. Small hairs cover the upper stem sections as well.

R *17 - Pontheiva? sp. - ORCHIDACEAE* - ORCHID FAMILY

This inconspicuous terrestrial orchid (not visibly perched on hosts),definitely seeks out *Agave americana* for a sheltering or otherwise desirable companion plant: always it grows on agave-rich slopes or banks around Quito. It was in full bloom in May.

A cluster of basal leaves surrounds the floral stem with dull-green yet silky-looking ovate blades. A prominent central rib shows on the leaf's outside, since it is always pointing upward. On both sides, faint parallel nerves and connecting network make for a precious-looking leaf 'fabric'.

The tannish-green, round stem looks smooth but is fine-hairy; it bears a few sheathing bracts and continues as an evenly-whorled floral spike of green-and-white flowers.

Each fine-hairy, green ovary is supported by a green bract. The two lateral petals are soft-green-striate. What looks like a broad lower petal is actually two leaning together; these are white with yellow-green tracings. The upper portion (lip?) seems to consist of two short, rounded lobes with an extra stamen;the brown-margined stigma bears one stamen(this needs clarification).

R *18 - Stelis or Pleurothallis? sp.- ORCHIDACEAE* - ORCHID FAMILY

R
(18) In 1942-43, this orchid was very common on the slope above Guápulo, in a quebrada way below there, and also near Quito toward Cruz Loma. Its delicious, even heady perfume filled the air when it appeared in multitudes. Because of its tidy spikes of muted-golden blossoms and its high-glossy leaves, it deserves to be called exquisite, in spite of its small stature. We found it budding in Oct, flowering in Nov, and fruiting in June - suggesting a year-round visible presence.

The roots spread shallowly - like those of epiphytic orchids. The sturdy, short, round stems are pinkish-and-green-sectioned, each unfolding its own impressive leaf, generally with a long, multi-blossomed floral stem enclosed. The leaf is deep-shiny-green above; duller, yellow-green underneath; it is ± without petiole; of long-oval shape with back-turned margins, notched tip, and straight central crease.

The very thin, erect floral stem is pale-greenish to pinkish; its numerous short sections make it appear like a skeletal back-bone. The blossoms face in two directions - alternating. Each one has three larger, outer segments (sepals): two straight ones side by side below, and one wider,± canopy-shaped one above. These are golden-yellow, silky-translucent. The petals are smaller, pale-creamy: one frilly and decorated with purplish-red borders and sprinkles below, and the lateral 'wings' sweeping forward; these also have red speckles - mainly following the margin and middle vein. The column is bordered with red and has two small dots in the stigma. (Better botanical description needed!)

Viewed as a whole, each small blossom can represent a tiny person with puffy pantaloons, beckoning arms, an apron and a large hood. The stigma is the little face. Or - someone may liken it to a baby in a cradle. The three-sided capsules resemble glassy-green, squatty flasks with dark stoppers. So much for our imagination!

R *19 - Stelis sp. - ORCHIDACEAE* - ORCHID FAMILY

The varying forms of what may well be the same species grew in individual groups, yet close together, on a steep rocky slope along the Saloya road, at ± 2000m. The fact that the fruits appear on the larger form, suggests that it is the female plant. I couldn't be sure of the inner structure of the smaller form's tiny flowers, because I had only a handlens. But I didn't find any fruits on these plants.

The soft-green leaves of the larger form are up to 15cm tall,firm and slender, proceeding from multi-sheathed, thus sectioned, stems. Each one also produces a very thin floral stem - sectioned and closely set with a long double row of small, glassy-creamy-yellow flowers. These alternate direction. They connsist of three ± equal, triangular sepals, and three diminutive brown petals, the lower of which is wider (lip?). They are fragrant like mimosa. The fruits are elongate, three-ridged capsules, each with the dried blossom for a topknot.

The smaller form has identically shaped leaves as the larger, but not exceeding a mere nine cm in length; they are a bit more

slender and succulent. The blossoms are smaller, both the outer and inner segments whitish-yellow with what may be a red stamen. It is far less fragrant than the female flower. Both bloomed in April, making the rocky roadcut look bejeweled.

This (these?) must be closely related to #18 becaue of the many similar features. However, these flowers are what appears like radially symmetrical, while the other's are strikingly bilaterally so.

R *20 - Diothonaea sp. (Epidendrum?) - ORCHIDACEAE* - ORCHID FAMILY

From a perpendicular, richly vegetated rock wall above the Saloya road, at about 2000m, hung the single flower cluster of this superb orchid from its ± horizontally projecting stem. The surrounding basal leaves enclosed several other main stems, but only this one had an inflorescence. More long, slender leaves alternate up the sturdy, noded, striate stem, forming a graceful terminal tuft whence the pendent orchid cluster issues.

Captivating is the strong, sweet fragrance it emits. By this alone, this species could be tracked more readily than by its low-key-colored, not too strangely shaped blossoms. Yet the silken sheen of their dark-maroon-streaked and sprinkled tannish sepals and petals, and the broad pinkish-tan lip speak of mystery.

This is the orchid that sealed the promise to myself that I would portray as many as possible of the smaller wildflowers of the jungle - and the highlands as well.

R *21 - Masvevallia nidifa - ORCHIDACEAE* - ORCHID FAMILY

We counted ourselves fortunate to discover a tiny orchid as remarkable as this one on two occasions: first on a sheer road-bank among moss cushions at 1850m; later - on a dead tree trunk, by the Transito River,Saloya, Occidente at 1400m. It was in Aug.1940.

Its roots are pale, mostly greenish, wavy, forming knotted threads between humus and mosses. They support a small clump of three to five cm tall leaves with sheathed bases. The petioles are ± twice the length of the darkish-green, oval blades. The latter are often reddish-purple-misted toward the apex; shiny above. The petioles (leaf stems) as well as the thread-fine floral stems are pale with reddish sprinkles.

Each floral stem has at least one bract and bears a single blossom of fantastic shape: with its three long 'feelers' it may well mimic some weird insect or other creature. In bud, these three extremities are joined as one, curving downward like a proboscis. In that stage, the blossom looks like a small, dull-glassy, creamy, purplish-red-striate bladder, showing the short nectar spur below. In the open flower, the segment above is like a rounded roof terminating in a long reddish 'spine'.The two lower 'spines' are yellow, each emanating from its sepal. An inner tongue-like structure with a red stripe down the middle points upward with its tip curving to fit under the 'roof'.(Needs botanical explanation). This must be one of Nature's special designs for a unique pollinator - (which?)

R *22 - Pleurothallis lepanthiformes - ORCHIDACEAE* - ORCHID FAMILY

Nature's flower forms in orchids know no limits; even among the dwarfs, they can be simple or fanciful: this multi-stemmed species combines both these qualities - for a purpose we may not have totally explored. We know for sure that it is adapted to serve the most likely means for healthy propagation.

This small epiphyte grows in Saloya on logs close to the forest floor at ±1500-1800m. We found it blooming in Aug.1940.

Its short roots form clumps threading through the mosses. They bear soft-green-petioled basal leaves that differ from the sharply-tipped ovate leaf atop each hair-fine floral stem; the latter leaf is rich-green on the face, and purplish with a soft-green margin on the back.

The floral stem has many sheathing sections of which the top one holds the leaf plus the two-to-three cm long, thread-thin pedicel with the amazing one-bracted blossom: in simple elegance, this floats like a tiny baloon barely above the leaf. It is translucent-yellow with longitudinal red stripes. In front, the lower 'lip' is dish-shaped with a blunt point, and the upper has two slender tips joined as one and curving backward. There are also two diminutive lateral tips. The inside shows two glossy-viridian anthers (?) like tongs awaiting a 'victim'/ benefactor? Which insect will it be? And how far away blooms the female plant?

R *23 - Masdevallia or Porroglossum sp. - ORCHIDACEAE* - ORCHID FAM.

A fallen, moss-decked tree giant made the stronghold for this astounding small orchid. We came upon it in the dark Saloya rainforest in Sept-Oct 1938, at ±1800m.

From the pinkish-creamy spreading roots sprouts a cluster of basal leaves - ochery-green, firm, long-ovate with average leaf stalks. The naked, spindly floral stems rise tall above the leaves. Atop each one sways the small yet fantastic blossom, mimicking an insect with folded wings and long spreading antennae, perched there. In our specimen, several corollas have already bloomed and dropped from their short, thin pedicels,out of each stem's same terminal bract.

Four of the flower's segments are ± fused, forming what looks like a row of pink-shiny beads below. The pale-pink corolla sides ascend, framing a sort of basin, which branches into two dark-rosy 'feelers'. On top sits a white 'shield', sprinkled with pink, attached to a white tongue-shaped structure that fits into the 'basin's curve. The flower's outside is pink with rose-red nerve-structure from greenish-yellow base and thin ovary.

The young bud certainly resembles a larva or grotesque crimson bug with turned-in snout. Whom does all this wish to attract or repel? Science may have the answer, but when we roamed through those forests, little had been explored considering the vastness of unknowns. But it stirred the imagination.

R *24 - Maxillaria sp. - ORCHIDACEAE* - ORCHID FAMILY

We found this rather showy orchid in three locations close together, growing on moss-covered logs along the Tránsito River, Saloya (below km 73).

Leaves as well as floral stems emerge separately from green or brown basal sheaths, yet closely packed together on a solid root system. Each gracefully arching leaf has a shiny-yellow-green upper surface, a dull-green back, a slender light-yellow-green sheathing petiole with the mid-rib running through the blade to its sharp tip.

The tall, slim floral stem is sectioned, with the long sheathing bracts reddish below, soft-bluish-green above. Each stem has a single flower that looks like a large pale-pink spider with the lip for its body. This is yellowish-dirty-reddish, set with silvery warts where four scallops curve forward to protect the inner parts. Again - a mechanism for a special pollinator.

The fruit is cucumber-shaped and grooved, the wilted 'spider' remaining perched on top in faded brown.

Chapter 3:

SALOYA

Chapter 3

S A L O Y A (Reprint from AMERICAS mag.,Oct.'67)

I can hardly believe it - I am back in beloved Saloya! This area on the western slope of Ecuador's Andes - bearing the name of the great river rushing through it - has been with me in my dreams.

It must be about four-thirty in the morning. I am half-awake, realizing that eerie and beautiful notes strike my consciousness. They come out of the immense depths and soaring heights of the mountain jungle surrounding our tiny cabin - a mere speck in South America's virgin forest.

I enjoy the magic of Nature's music, as I lie curled up on my hard cot. Most of the night was spent tossing and turning after our endless ride on a lumber truck winding its way around thousands of hairpin curves of the Saloya road. The exotic vegetation, touched by the spotlight of the truck's eyes, had filled me with wild expectation of this moment's coming - the break of day.

Everything is still clad in velvety black. All I can see is a star here and there sparkling from behind the tall crowns of trees. I know our little, sheltering cabin is situated a good many steps above the road on a clearing. Its surrounding canyon slopes rise steeply, forming a half basin around it. I remember it well from a year ago.

The grand chorus of the awakening jungle is one never to be

forgotten. Only an occasional cricket chirp close to my ear or the rustle of a cockroach in the bamboo walls break its rhythmic flow. It consists of thousands of strange voices, some like instruments - wooden rattles, metallic chirps, high whistles, tiny bells, flutes and drums playing, waterdrops hitting and slowly filling a silver goblet. And far and near, magnified by their echoes, many bird soloists sing their heart-rending songs of praise to the Creator.

I doze off again, joyously aware of jungle magic all around. I feel as though cradled in a songbird's nest, in the midst of an enormous music hall, whose doors will soon open toward the lighter notes of day.

When I awake again, golden sunlight streaks through the small cabin window. In a flash I am out of bed. Quickly, my jungle garb is put on, and I sneak to the window, trying not to wake my companions. After a glance into this mysterious world I have so far only heard, an insuppressible "Oh" must have escaped me, because my sister and father suddenly stand beside me.

Since the window is too small, we flock to the door. When we finally get it unlatched, all three of us squeeze through it at once, because we cannot wait to take in the whole scene.

A little balcony frames the front and both sides of the two-room cabin. It is crudely built, the lumber rough. But to us it is a little castle, sitting high in the open canyon whose little stream eventually feeds the rushing Saloya River away below, perhaps a thousand feet down. This country is so steep that we can see only the crowns of trees down the canyon.

However, the half basin behind us reveals marvelous tree shapes, trimmed with moss garlands, lianas connecting their highest branches with the regions below, where giant leaves mix with graceful fronds of tree ferns.

The jungle on the left is a solid wall, still breathing the mist of dawn and only contoured here and there with golden edges as sunrays begin to penetrate.

To our right the sun now paints pinkish-golden patches onto the highest forest trees. The air moves with steaming luster. Quite by itself in the clearing above us, an eighty-foot tree towers majestically against the hazy background. Its trunk is straight and its umbrella-shaped crown provides a beautiful nesting place for a colony of weaverbirds.

As we stand here inhaling the spicy dampness, we cannot take our gaze off the strange weaverbirds' nests, hanging by the dozens from the sun-gilded branches of the solitary tree giant. The ladies of the harem are busily weaving their club-shaped nests, while the rooster shows off, encouraging them with his fascinating tune. Every time he goes through his melodious verse of five successively higher notes, he leans forward until - with the final note - he hangs upsidedown. Then he pulls himself up to do it all over again.

He flies from branch to branch and sings several stanzas to all his lovely ladies. We cannot help laughing at his musical antics. They are comical and beautiful. Again they make me visualize the drops falling into the silver cup - so here is one of the soloists of the great morning concert!

We have to tear ourselves away from this exciting performance to get breakfast. Father is cook on such outings. He handles the wiles of the old Coleman stove, and we wash up the dishes, using orchid roots for scouring the pans at the nearby spring.

The first morning's hike is to take us up the trail behind the cabin. We hope to reach a mountain crest with a view. Most of our gear is left behind, so we can walk lightly. Father is at the head with the machete or bush knife - an indispensable tool.

Soon we get an idea how rapidly jungle vegetation grows. The trail is grown over beyond recognition, although it is supposed to be in use. We just carve our way wherever it seems possible.

We have entered into the darkness of the jungle interior. Every step makes us realize more clearly why the jungle is sometimes called "Green Hell"; it is green and treacherous.

Its floor is a build-up of loosely layered mossy branches, trunks and leathery leaves, sinking into rich, black humus.It has a peculiar smell comparable to that of ink. As we wade through the slippery depths and often lose a whole leg, we feel appreciation for our high riding boots and tough clothing. We need our hands to cling to whatever is firm and we use strong sticks for support.

During this delightful struggle we stand still to observe. Spicy odors, brillilantly colored blossoms of fantastic shapes, and exotic birdcalls enchant us. A flock of green parrots is quarreling loudly in the green forest ceiling. We notice how solid this foliage mass is, for not a speck of light from the sky is visible.

We dare only whisper as we plod along. It is too marvelous a world to disturb with our everyday things. We stand in awe of the profuseness of moss carpets enveloping every tree trunk - living or dead - and all the precious detail growing out of it. Orchids and other epiphytes thrive on its moisture.

In the distance - perhaps halfway down the river - resounds the strange call of howler monkeys. We hear and finally see a big brown toucan, making a clacking noise with his enormous beak as he works on a big, nut-like fruit. Butterflies dart by even in this subdued light.

At last, we come to a clearing where lumber has been cut. A jumble of irregular stumps and logs is grown over with moss and leafy plants. It is good to see the sky again. We can see the ridge we have climbed and the mountains on the other side of the Saloya River. They rise - rugged and sheer - with pointed peaks, separated by impenetrable canyons. They are covered solidly with trees, but appear cobalt blue in the haze from the steaming jungle.

Our sunny clearing is alive with colorful butterflies. We, too, enjoy the sunlight, but it makes us feel hot in our long sleeves. However, we would rather endure heat than mosquito bites. A pleasant breeze brings some relief from both these undesirable things.

We feel like explorers who have just reached their first marvelous goal. But we can't stay long - for on the opposite mountain range huge, billowy clouds are forming. They look like the rolling steam from an invisible, boiling pot, cooking up a

thunder storm for the afternoon.

When we reach the cabin, clouds cover most of the sky, leaving only a few sunflecks gliding over the treetops. While we are eating our lunch, thunder begins to growl and soon a tropical rain pours down. We enjoy watching from the balcony, which is sheltered by the overhanging roof. Moss and humus are drinking in the rain, and we can almost see the succulent leaves around us grow.

The rain continues all afternoon. We take a walk on the road with our rubber ponchos and hats on. Huge pink earthworms of snake size seem to love to be out in this weather as much as we. Waterfalls tumble down in every curve.

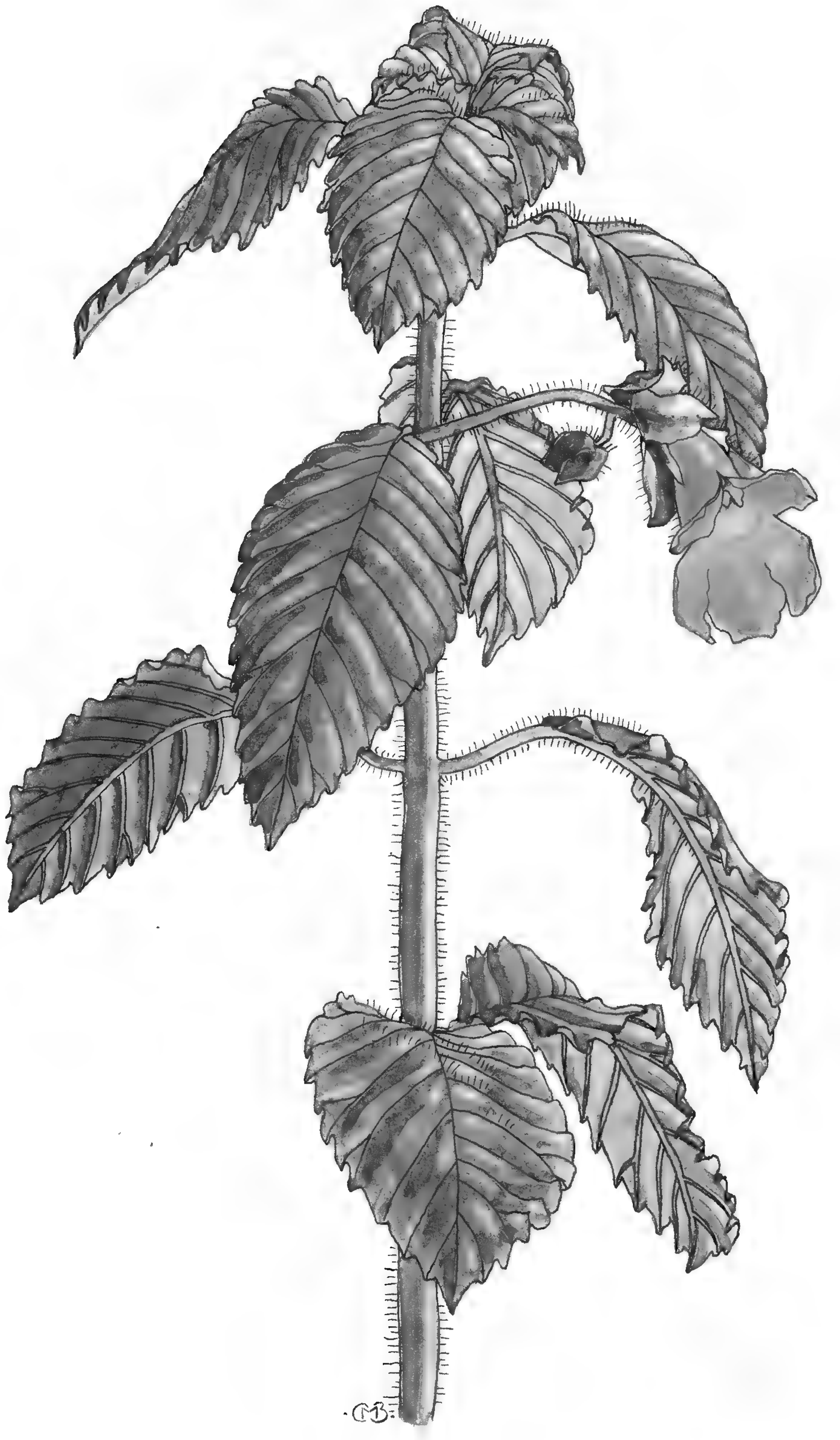
This is a day in Saloya. Not every day lets us see the sun, but when it shines, it is all the more sparkling. I love the mountain jungle in all its moods. To me it is a real paradise.

Chapter 3 (B):

ILLUSTRATIONS

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- In dark wet places in secondary forest in jungle - Singapore - Occidentale - Sept. 1961.
- Leaves herbaceous plant.

(M)
(C)
(R)

(Gesneriaceae
Paraboea



- Rather common in dark semi-tropical jungle at Saloya ± 1800 m. Occidente. Sept.- Oct.
- Large, herbacious plant.
- Closely related species seem just as common:
  - x One with glabrous, orange flowers of a bit more angular shape. Leaves much larger.
  - x Another has still smaller flowers of fire-red, densely clustered. Large leaves.

w/ Bl. & wh. print

(Gesneriaceae)
Besleria

B 2

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(Solanaceae)
Browallia speciosa B 3

3½



- On the deep jungle of Saloya, Occidente - semi-tropical - loosely attached to a decaying mossy tree trunk. Ancient.
- Small plant - its round branches somewhat drooping.

©
(MB) Plant Taxonomy Program (MBP)

(Ericaceae)
Vaccinium B 4



jungle of Salazar - Occidente - April.

longitudinally climbing them. It seems to be
[illegible] the moisture of the rotting leaves,
[illegible] placed indoors in water, [illegible] Leaves
[illegible] up.

[illegible] spikes [illegible] flowers, [illegible] filaments
[illegible] brown anthers. Corm with 5 [illegible]

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(Campanea)
Campanea



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- Saroya, Occidentalis, semitropical. In the jungle and its clearings. Common
- Stems usually trailing. Sturdy, stringy-green, containing pungent white milk sap.
-) Found germinating seeds inside the yet fresh berry.

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Carmel Valley, Calif. 93924

(Campanulaceae)
(Lobeliaceae) B 7

Centropogon [illegible] -
[illegible] 141



- Saloya, Occidente, semi-tropical; Inflorescence elevating; April.
- Leafless white in bloom, Stem straight and tall

(408) 659-2012

(Liliaceae)
(Amaryllidaceae)
Calliphruria

B 8

1:3



- Low, densely branched succulent shrub. Arching stems.
- On steep, wet slopes on N. exposures. Flowers on the ground.
- April - Sulphur Road - Semitropical rainforest.

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- Salvia, Occidente, ± 1900 m, August
  solitary, on mossy stems
- Found in abundance on Succan... (Oriented)
  in April, Alcan.
- Basal leaves: leathery.
- Flower - delicately scented.

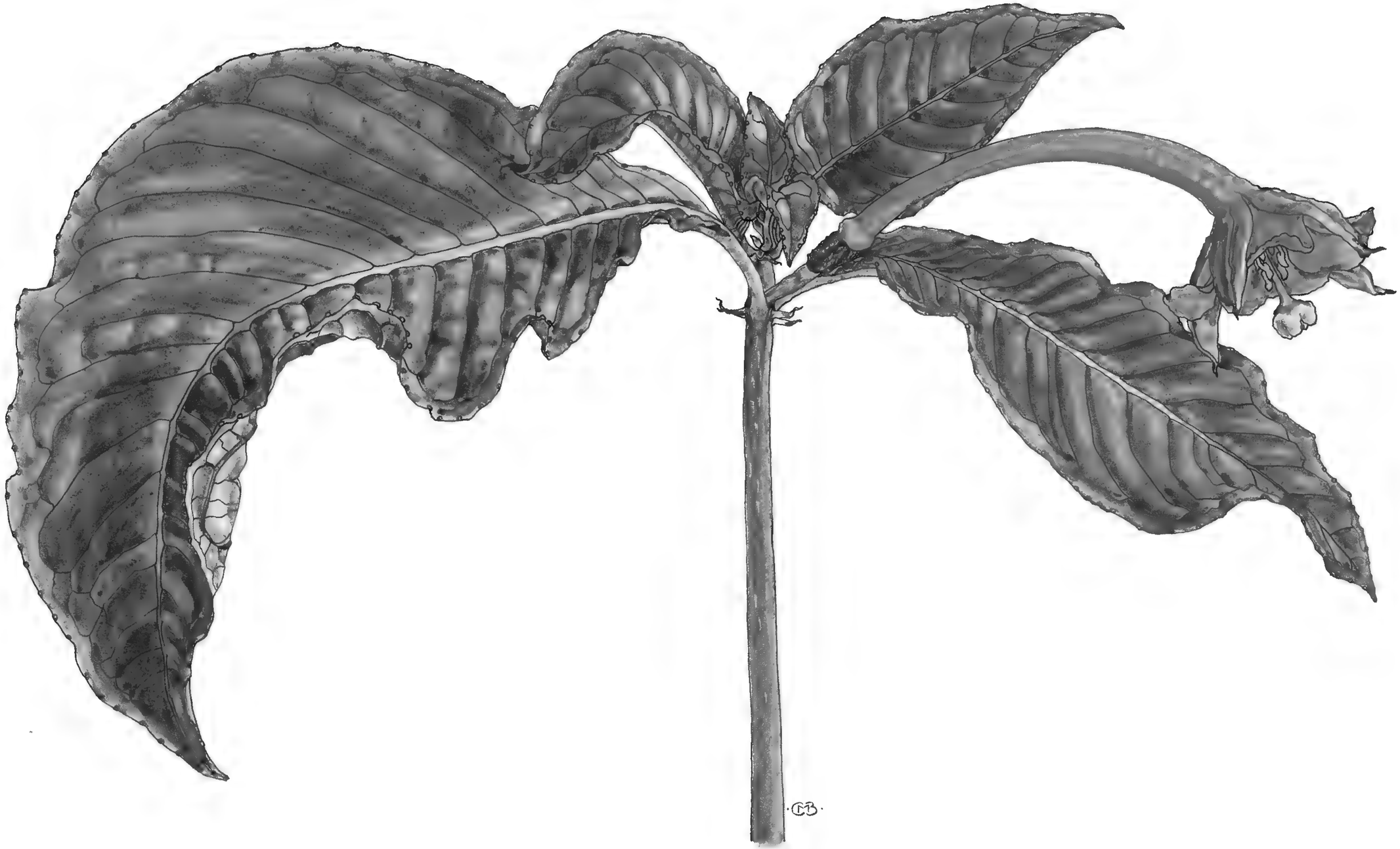
©

(Lentibulariaceae)

...-chyllium unifl...

B 10

121



- Salaya, Cordoba. - Several plants having come up in April, ... C.
- ... ily bed [illegible] plant. [illegible] ... number ... [illegible]
- Flowers single ... in small cluster ...

(M. C. [illegible])
(Catharina Maria Barnas)
Mary Barnas Pomeroy
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Fuchsia longiflora.

B 11

142

Chapter 3 (B):

PLANT DESCRIPTIONS

B *1 - Besleria sp. - GESNERIACEAE* - GLOXINIA FAMILY

Deep inside the wet Saloya rainforest, this leafy plant drew our attention with its bluish-green leaves, contrasted by its mostly single, brilliant-orange flowers. No doubt it grew so tall in search of light; it was in a dark place at ±1800 m; the time Spt-Oct 1938.

The main stem is sturdy, round and hairy. The ovate leaves have ± 1 1/2cm-long, slender petioles which are also hairy. The top of the leaves with its many regular 'fishbone-ribs' is somewhat hairy; the reverse side is pale-bluish-green and smooth, but the midrib is hairy - smoothing out toward the tip. There is an occasional branch on a lateral vein. The margins are elegantly toothed. The leaf-pairs criss-cross direction.

From a leaf-axil proceeds the ± 2 1/2 cm-long, slender, hairy floral stem with the single eye-catching blossom; it may have another bud or two on it. The likewise hairy calyx of five uneven sepals wraps the basal portion of the orange flower tube. This widens, opening into two upper and three lower lobes. The throat is yellow-green. A delicious-looking flower, welcoming hummingbirds - orange and red being these swift flyers' favorite-colored blossoms.

B *2 - Besleria sp.- GESNERIACEAE* - GLOXINIA FAMILY

From amongst the many species of *Besleria,* we were fortunate to capture one of those with pouched blossoms. It brightened the

dark underdstory of Saloya's mountainside jungle at 1800 m, in Sept-Oct. It seemed to be common (hard to be sure when one covers small areas only).

It forms erect, smooth, round stems. In this particular plant, the leaves appeared in threes instead of pairs, and they neatly alternated directions. I failed to explore whether other plants of this species were arranged in this manner.(I have so far found this anomaly(?) in only two plants of the Calif.bush-monkey-flower of the equivalent temperate *Scrophulariaceae* Family). The petioles are short, sometimes tinged with pink. The rich-green, ovate blades are evenly fish-bone-structured, smooth, and with toothed margins.

The floral stems come from the leaf-axils - three to each set of three leaves in this case; they are slender, pink, smooth; bearing a five-part-calyx-'package'- two flower-supporting lower sepals, two wrapping latterals, and one covering top one; all being brownish-green, striate with lines of pale dots.

The bright-carmine-colored, hairy blossom fits narrowly into this 'package'. It widens to form a flattish pouch with a small five-lobed opening, through which the stamens are visible. The purpose of this protective design may well be to invite the only desired pollinators -- most likely hummingbirds - and to keep out large bumbling insects?

Several other species grow also in this area: one with smooth orange blossoms of the same shape, but slightly more angular. Its leaves are much larger, but also arranged in sets of three each. So - this may not be anomalous but typical. Another species, also

with large leaves, has small, fiery-red flowers that are numerous and densely clustered.

B 3 - *Browallia speciosa* - *SOLANACEAE* - NIGHTSHADE or POTATO FAM.

In more open, sunny places - frequently along the Saloya Road - thrives this beautiful wildflower. We found it blooming and fruiting in Sept-Oct 1938.

Its slender, smooth, round stem is purplish-maroon. The fairly small ovate leaves have widely-spaced veins with bulging inter-spaces. These give a wavy appearance, even to the margins. The maroon petiole with its greenish base is very short and curving upward, but the blade extends outward. These leaves are almost opposite, one just a trifle above the other.

The flowers ascend singly from a leaf-axil, on ± two-cm-long, slender peduncles. The five-sepaled calyx is green with purplish-shiny basal portion, the upper segment larger, yet all with sharp-pointed tips. The ± maroon corolla tube is extremely thin, broader just below the throat. It opens into five rich-violet petals with parallel nerves dividing them as if quilted - four of them with three, and the upper, considerably wider one with four nerves. All five terminate in graceful tips. The general impression is that of a simple, oldfashioned, small petunia (likewise in this family). The calyx enlarges around the swelling berry-like fruit. Both turn a deep-red-purple.

Between Chalpi and Guacamayo, Oriente, we found a very similar form: flowers much larger and lighter lavender. It bloomed in

Jan-Feb 1940. Many browallias have been hybridized into showy garden varieties.

B 4 - *Vaccinium sp.* - *ERICACEAE* - HEATH FAMILY

Much like an epiphytic orchid, this tiny member of the Heath Family attached its small roots to the mossy trunk of a decaying fallen jungle tree in Saloya. It was in a dusky situation at 1800 m, in Aug.1940.

The vine-like plant is low-growing, a few of its branchlets hanging down from its perch. The reddish-brown stem is tough, bearing alternate leaves at regular intervals (± 1 1/2cm; 1cm or less above), zig-zagging at every leaf axil. The yellow-green to dark-green leaves are almost rhomboid-shaped with pronounced central vein plus two basal laterals that run parallel, then fade into the smooth margins toward the apex. There is a barely visible (1 mm) petiole.

As for the blossom - it is one with an inferior ovary (unlike most other genera in this family). One hair-thin floral stem ascends from ± every other leaf axil, bearing a white jug-like corolla with a narrow neck, its lip splitting into four gracefully recurving, tiny lobes. Eight white arching filaments come from the blossom's base, surrounding the style with their long orange-yellow anthers, so that their tips reach into the 'jug''s neck constriction. The soft-green calyx containing the ovary ends in four obtuse segments.

Next comes the fruit - a seven-mm-long, oval berry, looking

like a shiny-lavender glass bead suspended by its now drooping pedicel. The berry's lavender flesh envelops several light-green-blue seeds. Here is diminutive detail from vast jungle mountains!

B 5 - *Campanea sp.* - GESNERIACEAE - GLOXINIA FAMILY

Like precious jungle jewels suspended from branches or thin tree trunks, *Campanea's* long bell-shaped flowers easily catch our attention - often at eye-level; there the plants braid their roots longitudinally along, and gradually around their host, drinking in the moisture from the air. We found one plant just above the Saloya Road in a semi-dark setting by a stream, another on the steep slope below, at kms 80 & 82, in April 1941.

When I placed my subject in water to portray it, it quickly absorbed much of it, letting it transpire via its leaves and blossoms, causing all its parts to drip. Apparently, this epiphyte hereby received an excess of the wet mmedium.

The slender, dirty-pale-green, smooth glassy-looking, yet hairy stems may form various branches, all of which bend or curve gracefully, producing commonly four two-to-four-cm long floral stems with one or two buds each - also on small pedicels.

The good-sized ovate leaves are uneven - one side wider than the other. They have pretty crenate borders, and their 'fish-bone'ribs are irregular, some of the latterals branched. The leaf tops are velvety-green, bottoms red-violet with furry-whitish shimmer. They are opposite, criss-crossing directions.

The corollas, though ± bell-shaped, are bilaterally-

symmetrical only: they are long, sometimes a bit pot-bellied, with a constricted throat; silvery-pink-hairy, with soft-greenish-yellow ± rounded petals flaring outward, showing their purple-black-dotted insides.

The flower's invisible interior is silky-pinkish-white with longitudinal lines of pink dots. The long white style protrudes beyond the spreading petals. It is greenish at the tip with its two-lobed stigma. The four ± twining filaments are pink to greenish, hairy. Their anthers are double, brown, yellow-edged, then dusted with gray-white pollen. They lean together, forming a rosette. The superior ovary has five pale-yellow appendages. The soft-green calyx spreads its five triangular sepals very flat when in full bloom.

B *6 - Centropogon cornutas - CAMPANULACEAE - BELLFLOWER FAMILY*

Particularly in more open, light habitats, this member of the bluebells is a common sight; Its strong, slender stems twine amongst shrubs of Saloya's forest clearings. We found it along the River Tránsito at ± 1400m, as well as way above - at 1800m, often by the trocha (trail). It bloomed in Aug 1940. Its eagerly climbing, light-green to tannish stems are full of a milky-white, pungent juice.

The alternate leaves have short, up-curving petioles and elegant down-curving, broadly-lance-shaped blades with ± rounded base. These elaborate leaves have a pronounced central rib with numerous branches and branchlets that tie up with each other. The

margins are finely-toothed and wavy. The leaf-tops are green-silken, their reverse sides high-glossy with conspicuous rib structure. The floral stems proceed from the leaf-axils - one to a leaf - horizontally, then curving upward; they are light-green, four-to-five cm long, bearing one flower each.

The green, sculpted calyx is ± button-like, with five corolla-base-clasping sepals. they are like candle-holders presenting their long-sweeping, dark-crimson tubular 'lights. The blossom is narrow, with two small peaks just above the calyx-lobes; it widens somewhat, then slightly constricts where three smaller (lower) and two larger (upper) petals point downward. In the rain, the typically-dull 'finish' turns into a fiery-crimson.

The four united stamens form a thin purple-crimson tube - their two shorter and two longer, hairy, blue-gray anthers fused around the style, which finally protrudes with its greenish-tan or yellowish two-lobed stigma.

You could also liken this amazing blossom to a slender hand with its pointer out. These types - genera *Siphocampylus* and *Centropogon* - are favorite forms in Ecuador's wilds - tropical, semi-tropical and temperate alike; by hummingbirds' requets?

B 7 - *Ceentropogon subandinus* - *CAMPANULACEAE* - BELLFLOWER FAMILY

In April 1941, in shady forest settings or clearings, we had frequent encounters with this fantastic flower of the Occidente. Its stem is mostly recumbent; it is round, sturdy, shiny-green, and contains pungent white sap.

The alternate leaves are ± ten cm long, pointed-ovate and tooth-margined. The leaf-stalk (petiole) is 1 - 1.5 cm long and continues strongly visible as the purplish midrib with its numerous ± regular 'branches'- neatly curving into each other close to the margins; this refers to the leaf's sivery-green back-side, while the top is dark-tannish-green with silken sheen and being relatively smooth.

The bold 'elephant-head'-suggestive blooms stand on erect 9-11 cm long, slim, round floral stems, rising one to a leaf-axil. Each bright-yellow-green, glossy, pot-shaped calyx has five narrow, spreading, wavy-edged sepals. The flower is deep-purple-red, bulging-round-striate just above the calyx with inferior ovary. The floral tube then is very thin but broadens into conspicuously bilateral symmetry with five long, sickle-shaped, downward-curving lobes.

The five stamens are fastened to the corolla base, fused as a tall thin tube - greenish-pinkish,short-hairy - with the five uneven, joint anthers pointing downward. The long, thin, pale-green style is inside this column and protudes slightly, its double, brown stigma arching down.

The long floral stem turns from gren to pinkish and blue at the end where the three-cm-long, less wide, fruit develops as a striking, pale-cerulean-blue berry with flattened sides and ends. It is light-weight, porous-white-fleshy inside. A cross-section shows the two locules, in which multitudinous tiny brown seeds are arranged - ± in two circles. In some yet fresh berries that still adhered to the plant, I found already sprouting seeds.

Centropogon berries are supposed to be edible, but I feel they were meant for birds and other creatures who could best promote seed dispersal.

B *8 - Callipsyche aurantiaca - LILIACEAE (AMARYLLIDACEAE)* - LILY FAMILY

This imaginative Amaryllis-type flower was found in a clearing near the Saloya Road at km 80. It bloomed - leafless - in April 1941. The leaves, being basal, most likely had already appeared and rotted or dried before the tall floral stem sprouted. This is round, erect, sturdy, and longitudinally-striate in soft green.

On top, ± five short, round peduncles spread in various directions, having burst from irregularly-torn sheathing bracts, and bearing a gorgeous yellow-and-green, ± funnel-form, six-petaled (three sepaloid) corolla each. The ovary is inferior, the blossom bilaterally symmetrical, in that it is leaning outward, its six extremely long silken-white filaments with their beige anthers streaming forth. The style is almost as long and bears a pinhead-size stigma. A wildflower never to be forgotten!

B *9 - Begonia foliacea - BEGONIACEAE* - BEGONIA FAMILY

One of the most common and prolific plants of Saloya's subtropics, this 'leafy begonia' lives up to its name - its richly arranged small-leaf foliage adorning roadsides and steep, wet slopes. Even in darker jungle interiors, it thrives on rotting logs on the ground. It bloomed profusely at km80, in

April 1941. It is likely to be a year-round bloomer.

Red and green being its basic color scheme, indeed it catches our attention; its flowering branches with myriad pink-and-white tiny blossoms mostly form elegant arches. The details are small but precious: The main 'trunk' is shiny-brown-red, longitudinally grooved, thickly jointed at the closely-alternating lateral branches. These are round, red, succulent, bearing clusters of almost stalkless, shiny-yellow-green, rosy-margined leaves - asymmetrical and double-toothed. Stipules are usually present.

Male as well as female flowers appear on common branches. The male blossoms are ± radially symmetrical, having two rose-red sepals whose inside is pale-pink; in the interspaces, two slender white, ± heart-shaped petals face each other. The center holds a bunch of pale-yellow, ± disk-like stamens.

The female blooms are irregular; they have two rosy sepals, and three petals; one white with a pink line down the middle, two half-white, half-pink, thus imitating a third sepal (why?) when the flower is closed. There are three styles with light-yellow, forked stigmas. All this crowns the three-part, glassy-red, inferior ovary with its sharp, widening keels (one being wider).

Both flower types bloom at the end of hair-fine floral stems, sometimes with several buds and small bractlets.

There are ± 900 known begonia species - common in the tropics and subtropics, many of which are favorites as house and garden décor. We all have met some of them.

B *10 - Orchyllium uniflorum - LENTIBULARIACEAE* - BUTTERWORT /

BLADDERWORT FAMILY

(10) Of this small carnivorous plant family consisting of ± 120 herbacious species - both terrestrial or aquatic -, we were fortunate in finding this exquisite, single-flowered, epiphytic species. It grew all by itself on a moss-padded tree stump by the Saloya Road at ± 1900m, in Aug.1940. It also occurs in the Oriente where it seemed common on Guacamayo, blooming in April-May 1943.

I did not study the roots to discover how it catches insects - most likely in bladders concealed in the wet mosses. I did, however, note the horizontal rhizome which sprouted erect, single leaves - with or without a floral stem. All the leaves are basal, leathery, soft-green, the longish, flattened stalk continuing as defined central vein; the latter is somewhat darker as are the smooth margins. Some irregular side veins are showing.

The single floral stem is delicate-green, slender, erect but bending from the weight of its showy, butterfly-like, lavender blossom swaying at the end. Several alternating, lance-shaped bracts interrupt the stem's simplicity.

The flower is delicately scented. It issues from two pale-green calyx lobes - a smaller roof-like one above, and a larger one behind pointing downward, both being splotched and partially bordered with purplish-red.

The blossom's lavender, white-centered upper lip is likewise roof-like, sheltering the two yellow stamens and soft-green stigma. The conspicuous lavender lower lip has two broad lobes and bulges above these into a yellow-fronted, bag-like insect

landing. The flower extends into a white-lilac to yellowish spur that lies hidden inside the lower calyx segment. A blossom that has been visited by a pollinator, remains 'open-mouthed'.

B *11 - Fuchsia longiflora* - Long-flowered Fuchsia - *ONAGRACEAE* - EVENING-PRIMROSE FAMILY

Fuchsias being popular, colorful ornamental flowers, they cause great excitement when discovered in the wilds. This happened to us when roaming through the rainforest at ± km 72: the species appeared common there, less so at km 80. We found it blooming in Apr.,Sept-Oct, in Saloya's yet little-explored mountain-side jungle.

The plant remains fairly low. Its stem is thick, round, not woody, tannish-green with short, raised, longitudinal streaks.At the leaf-axils, a reddish ring and four horizontally-spreading solid stipules are typical (stipules are unusual in most genera of this family). The leaves are opposite on short, pale stalks, and the blades large-ovate with a 'quilted' look due to deeply-set,± alternate, lateral venation coming from the pale central rib. The leaf's upper surface is dark-yellow-green and silky, with wavy margins that are finished with tiny wart-like, red dots. The reverse side is pale-greenish with raised venation.

On a short, round, often purplish floral stem sits the bright-green, grainy, eight-grooved ovary, bearing the gorgeous, brilliant-vermilion, 7-9cm-long curving floral tube with its slightly-swollen base. This gradually widening corolla opens into four slender calyx lobes - four fiery-carmine-red, rounded petals

in between. The four longer and four shorter rose-red stamens are inserted along with the petals; they continue downward along the striate, white-pinkish, silky inner wall of the corolla tube. The silken-pink style coming from way below, widens and turns rose-red just below the impressive, four-lobed, pink stigma.

These magnificent flowers generally bloom singly, or in pairs or threes, but always one 'trumpet' to each subtending leaf.

Mother Nature has indeed given each species its individual set of patterns to adhere to. It is wonderful!

Chapter 4:

RETURN TO QUITO

Chapter 4

R E T U R N T O Q U I T O

Each time we return to our comfortable home base in Quito, it is a joy to sit down with my brand-new 'floral captives on paper' and do my best with their identification.

Father retrieves his precious oil studies from the handy small storage box he has himself hand-crafted for such expeditions. Seeing our unforgettable vistas again - clear and deep as the living reality they are drawn from - brings each day, each special event, back into first-hand focus. The right colors, shapes and proportions can give such marvelous vitality to a small panel or canvas! The latter, for reasons of convenience and economy are small or medium size. Father's paintings are always produced on the spot under whatever climatic challenges.(In the art world's lingo: undeviating 'plein-air' painting).

We reminesce about all our experiences in the many special places that now are lined up before us. It is as good or better than photo albums or color slides can be; no turning of pages or lighting up projectors needed. Anyhow, color slides are at this time just becoming the incredible novelty advancement in photography. We are in no hurry to take down Father's delightful exhibit, and I display my new flower watercolors on a nearby table. Thus, Mother and my sister Dora can likewise partake of our trips. In viewing and reviewing, we learn more about our new home land.

Father's studio extends across the full width of the second floor of our Swiss chalet named 'GENCIANA'. (Its name panel - lettered and gentian-decorated by me - adorned, perhaps still does, the south gables. On the other side, the studio's four windows offered the view across our large, oblong, geranium-bordered garden, sweeping over meadows and eucalyptus stands to the great Pichincha.)

For painters who are truly sensitive to color, it is important to have a workplace flooded with daylight. Ours has the ideal northern exposure. Father has various easels with work waiting for his restorative touch - mostly 'invalid' Colonial, religious works or other antique oil paintings. Best of all, a large canvas for a commissioned picture is in the make from a chosen smaller study - one of his 'plein-air children'.

For my flower work, I prefer sitting at my table in the room opposite the studio, because of those many projects in operation and often private art students coming. It is safer for the plants this way. My method for getting the best results with the least changes in my models' stem and leaf shapes is to pick the flowers and put them in water the afternoon before I plan to draw them. For me there's no better time to do clean work than in the morning: new buds will open and give me the time to portray various blossoms in different stages of development, and continue to watch them grow and unfold. Some species definitely 'close up shop' in the afternoon or at dusk; yet contrariwise, most evening primroses o p e n in the late afternoon or evening and do not last into the following day. This is a rare idiosyncrasy and

suggested in the name. In this case, I collect in the early morning.

Evening primroses, mints, legumes, mallows, wild geraniums, etc.- typical wildflowers of the temperate zone, abound on the Quito high plateau and lower down. The large Figwort Family with its ±3000 species is well represented , for example in calceolarias, paintbrushes and monkey-flowers. Strikingly so, the Composites in multitudinous yellow forms that baffle even the seasoned botanist forevermore!

In these nineteen forties, the lovely green pastures surrounding the north-east limits of Quito (LA FLORESTA) harbors at least a dozen species of the genus *Bidens* of that great plant family. They are becoming our close friends as they accompany us wherever we walk. (A very special one with bold stems,large oval leaves, snow-white rays and gold center, is in the HUNT INSTITUE, Pittsburgh,Pa., in their collection of my Ecuadorean flower paintings, along with larger species - three gorgeous passion flowers, a datura tree branch, and several tropical flowers, and California mushrooms.)

Yes, the Daisy or Sunflower Family is a very popular one with, or the best known by, almost all people. With its ±25,000 species world-wide, no one escapes their presence. Here in the highlands of the Andes, there is a wild variety of genera and species.

Quito, for us, is typified by many distinctive wild marigolds, which perch in attractive groups atop adobe walls. Each plant has but one slender stem that bears candelabra-like branches, each tipped with a tall green or pink urn-shaped receptacle, holding

few tiny broad rays. Although these fascinating small flowers may pass for 'weeds' with the general public, we who can see close-up, find exquisite features there, and - the unmistakable strong aroma.

Back to the meadows along the then dirt roads, we find many secretive wildflowers hidden among the grasses - even well into the summer months: of the Iris and Lily and Amaryllis Families, the Lobelia, Nightshade, Oxalis and Heather Families. . .

Always we are inspired especially by the hundreds of snow-white 'chicory'-type multi-rayed daisies flat on the ground! They should be Quito's emblem - like fallen stars. This practically stalk-less habit is one very common in the higher altitudes, as shown in the story of Hilario and the professor. It points to a beautiful adoption of a protective measure against the often severe elements.

As mentioned earlier, orchids also thrive in Quito's often arid habitats. They may be less showy than some of the warmer-climate species, but every bit as exquisite when scrutinized. All these discoveries reward the seeker for beauty. Drawing even one such treasure, elevates us yet more; it helps us remember our joy of having found it. We feel closer to its individuality.

Many exotic shrubs are hard to identify. A great number of these characterize open areas and many quebradas (canyons).There the growth turns lush and often jungle-like.

I include some of these smaller, shrubby plants because they belong to several, to most of us, less familiar families, some of which are strictly South-American or confined to Ecuador, and

perhaps Peru. Each description gives a nutshell account. All these species seemed very typical at the time, but may by now have been replaced by 'intruders', as happens in so many parts of our globe where people from all over travel, reside, develop or build, often unwittingly destroy. Foreign wild seeds are thus easily introduced, or others purposely sown in gardens and parks.

One such richly represented South-American plant family - the *MELASTOMATACEAE* - quickly drew our attention because of its members'striking oval leaves with parallel veins and commonly 'bubbly' or finely-rough upper surfaces. The blossoms, likewise, are of astounding, exotic forms and colors. They occur in the higher altitudes as well as in the sub-tropics and tropics.

At quebrada rims, we can never resist that unique Bromeliad *Pitcairnia pungens* (Pineapple Family) which has adapted to terrestrial living, contrary to the epiphytic habit of its clan. It is gorgeous with its sweeping, fiery-red inflorescences. It is as large a plant as I wanted to include here among the wildflowers.

Its larger relatives appear singly or crowding in on trees of the rainforests. What comfort to know that here are living drinking vessels if one should ever get caught in a jungle plot without water! Their solid slender leaves are arranged so that their semi-tubular bases clasp and interlock, thus forming small water tanks. These, however, are sometimes breeding places for insects and even frogs and other creatures. So - the thirsty person in question had better check closely before filching a bromeliad from which to drink...

A flowering and fruiting branch of a spectacular shrub in the well-known Nightshade or Potato Family is imperative as a last one in this chapter. It grew on our land when we acquired it and built our house. Plans were created to include this tree-like bush - *Solanum marginatum.* Along with the white-blooming datura tree ~~(HUNT INSTITUTE)~~, it is the first thing I see each morning when opening my window and shutters; its silvery trunks, blue-green, gray-fuzzy foliage, wicked thorns, silken blossoms and spring-green, then shiny yellow fruits, clamored to be portrayed. It is perhaps the most complex piece of botanical illustration I did for this collection, and I delight in it yet.

Fortunately, its poison doesn't show, but do n o t eat its fruits! Burros can eat all of it including the thorns; they have adapted to a very frugal life, finding this nightshade a delicacy. I wonder if native Ecuadorean people still wash their clothes with the 'soap' derived from these fruits - rubbed and scrubbed on rocks in the ice-cold Machángara River? Or has 'civilization' entered their primitive lives with laundromats instead? I haven't asked anyone who has recently visited Ecuador.

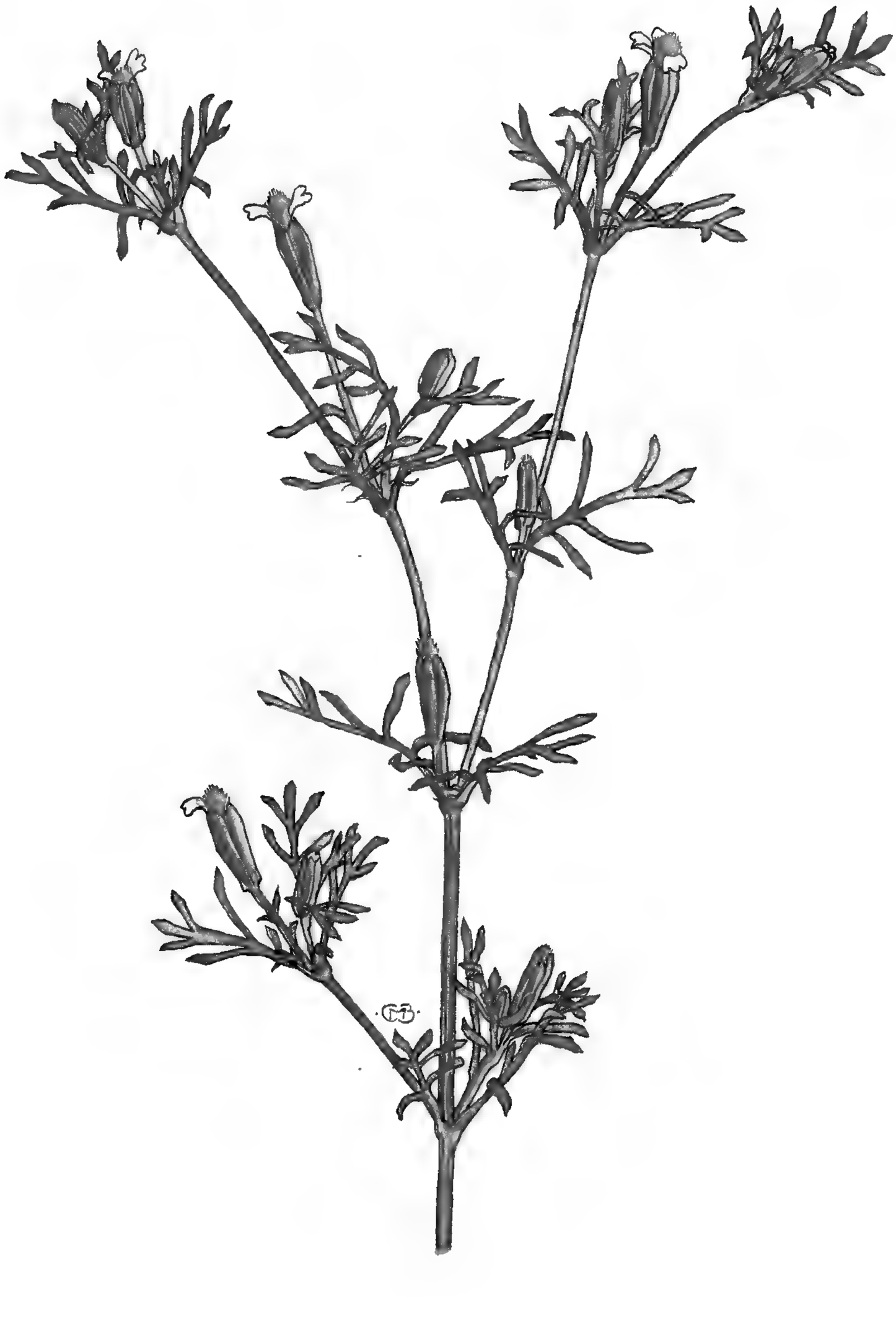
Chapter 4 (G):

ILLUSTRATIONS

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88 Boronda Road
Carmel Valley, Calif. 93924

50.



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(Compositae) G 2

Tagetes terniflora.



- Sandy meadows near Guide - Thoesfu
- Bride of leaves nearly white. Accumulescent.
- Not very common

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(Completed)

G 3

Chaptalia [illegible]

69



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(Compositae)
Tagetes patula
French Marigold

G 4

130.



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(Compositae)
Bidens leucanthia



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(Compositae)

Bidens humilis
Michx

G 7



- Chinese Guide - in meadows and roadsides.
- [illegible] and nearer at hand [illegible]

© [illegible] MB 1980

Bidens pilosa var. radiata fina?



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Compositae G 9

Bidens crithmifolia

8



- Guatemala - Floresta. Dry level, dry grass, in [illegible]
- 10-15 cm tall, erect.

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G 10

(Compositae)
Conyza gnaphalicides HBK

Tit.



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(Compositae)

Tridax Stübelii

128.



Onoseris hyssopifolia (Compositae)

(11)

IBC 1938

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Carmel Valley, California

Onoseris
hyssopifolia



6 Ca. slope above Soquel, among shrubs. Blooming in Nov. 1 plant.

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Compositae

Helianthus sodiroi

G 13

Chapter 4 (G):

PLANT DESCRIPTIONS

HIGHLAND COMPOSITES

G *1 - Tagetes pusilla* - anis - Anis-Marigold - *ASTERACEAE* - *COMPOSITAE* - SUNFLOWER FAMILY

Quito's anis-plants are not like those of N-America (from the Mediterranean) of the Parsley Family (*Umbelliferae*), but of the Sunflowers - even the marigolds. Instead of the typical pungent odor of that genus, this inconspicuous herb has a strong anis-scent. No doubt, it is still common around Quito in spite of the mushrooming urbanization, and is a year-round green inhabitant. Richly branching slender stems along with the 5-7-fingered, ferny opposite leaves form a lacy 'network'.

Within the leaf-pairs, usually a couple of 1-2cm-long fine floral stalks arise, each bearing a narrow, green-bracted head with a tiny, ± pointed, yellow disk-flower-tuft, and generally 2-3 white, 3-lobed ray-flowers.

Most people would call it a weed, but I like to give it a prize for providing the well-loved, spicy aroma that compensates for its modesty.

G *2 - Tagetes terniflora* - Mint-Marigold - *ASTERACEAE = COMPOSITAE* - SUNFLOWER FAMILY

A less common Quito-*Tagetes* is this mint-scented one with its broadly-pinnate, typically blue-green leaves with evenly-toothed margins. Toward the branching summit, the leaves are alternate. Longer or shorter floral stalks ascend from the axils, branching

usually as three short pedicels; the lateral ones bear ± bottle-shaped floral heads, the central ones, stout heads - like pot-bellied flower-vases. All are light green with longitudinal brown streaks. The disk-flowers form a fluffy yellow center for the 1-5 creamy ray-flowers. The latters' spreading lobes appear as if cut off straight, but for a crenate finish.

It is a handsome plant, even if not very colorful: its beauty lies in the various shades of blue-green, the decorative leaf-shapes, and the amazing small flower-heads as well.

G 3 - *Chaptalia nutans* - *ASTERACEAE* - SUNFLOWER FAMILY

Perhaps because of its solitary appearance here or there, as well as its small dimensions, this dandelion-like wildflower of Quito's meadows seemed to be uncommon. We came upon it only a few times on our daily ramblings during those ten years we lived there (1936-46).

From a tap-root, a rosette of often gracefully arching simple leaves ascends. Their slim, pale-greenish to reddish leaf-stalks continue as an ever more slender mid-rib into each blade's tip. The long-ovate bright-green leaf is nearly pure-white on its reverse side; its margins are wavy and toothed - the teeth tending to point downward.

These strictly basal leaves produce a fairly tall purplish floral stalk with downward-directed wavy hairs; gradually turning grayish to white - tapering, hairless -, it bears a narrow receptacle of lance-shaped, clear-green bracts, holding ± a dozen

slim, pointed, spreading, snow-white ray-flowers. The small 'heart' is pale-yellow. When seen from above, these flower-heads look and shine like silver stars - the one certain give-away of their charming presence.

G 4 - *Tagetes patula* - French Marigold - *ASTERACEAE* - SUNFLOWER FAM

Contrary to its English common name, this marigold is a native of Mexico. It has found its way into the USA, abounding for example near Santa Barbara. It must be a favorite garden flower to have been introduced in Ecuador: it certainly made succesful escape from within somebody's adobe-enclosed property above Guápulo, where its golden masses covered the floor of a eucalyptus forest. The air was cented with its strong *Tagetes* odour - a bit toward mint. It bloomed in Dec-Jan.

Its slightly 'wooly', a bit grooved stems may reach 50cm and branch profusely. They are green, sometimes purplish. The leaves alternate, with long stem-spaces between them; they are composed of numerous slender, serrate leaflets, alternately arranged along the narrow mid-rib. Those smaller leaves that alternate along the floral stem, are bract-like with sinple fringe-like laterals.

The involucral bracts are fused into a blue-green, long-bell-shaped tube with short longitudinal, orange-brown tracings; it terminates in 5-7 triangular tips. The flat-spreading 'daisy-blossom' consists of eight fairly narrow, mostly two-creased, bright-golden ray-flowers with ± flattened or scalloped ends. A small group of five-tipped, orange-yellow disk-flowers form the

'heart'.

The introduction of wild or cultivated species from all over the world to other continents has a long history. Who could have guessed that I would pick one more non-native to Ecuador for my collection? Luckily, it is here accompanied by several typical marigold species of Quito's high plateau.

G 5 - *Tagetes multiflora* - Candelabra-Marigold - *ASTERACEAE* - SUNFLOWER FAMILY

If ever there was a perfect candelabra of Nature's design, a young plant of this 'many-flowered' marigold is it: a very thin, erect, soft-purplish-red stem spreads short, delicately-pinnate, bluish-green leaf-pairs in different directions. At the summit, its candelabra-branches consist of thread-fine, pale-turquoise floral stalks, each one holding what looks like a lavender-pink candle with an orange flame - however flat.

The candle, of course, is the tube formed of the fused involucre-bracts that are seen as five small triangular tips. Tiny, orange-yellos streaks look like fairy-stitches done to effect the fusion. On the tube's inside, these appear as orange prickles. Four or five rounded, yolk-or-orange-yellow ray-flowers spread ± 2mm beyond the tube's width.

These young plants often decorate mud-walls (tapiales) of Quito's suburbs. Drought does not seem to bother them. They were particularly abundant close to Pichincha's foot - their many branches forming wider proportions, thus losing somewhat the candelabra effect. A little gem in color and form!

Here again, the marigold-scent is unmistakable.

G *6* - *Bidens leucantha* - a Bur-Marigold - *ASTERACEAE* - SUNFLOWER FAMILY

Here is an attractive pale-creamy & yellow-flowered bur-marigold that was common around Quito. It has consistently five spreading, oval ray-flowers that are neatly creased. The disk-flowers form a well-rounded, orange-yellow 'pompon'in the center. Unlike true marigolds *(Tagetes)*, the bur-marigolds have two circles of bracts - the inner different from the outer - composing their involucre. In this species, the outer ones form a bowl-shaped, hairy base like a calyx.

The main stem is angular - its floral stalks being rather long and slender; all have some short, irregular hairs. The smallish, muted-green leaves have three parts, practically without leaf-stalk; the two lower lobes are small compared with the central one; all are ovate and sharply-toothed. The entire plant has an open look to it - easy for picking a wildflower bouquet. However, in a more mature state, some blossoms' hooked achenes (seeds) may get lodged in your clothing as you select your chosen blooms; they are called the 'beggar-ticks'.

G *7* - *Bidens humilis* - niachiag - a Bur-Marigold - ASTERACEAE - SUNFLOWER FAMILY

The 200-sps.genus *Bidens*, typical for the warmer regions of the Americas, is well represented around Quito; among the few here illustrated, this kind - called niachiag by the native

people - is by far the most common. At least it was so in the 1935-45s: at all seasons, in meadows and gardens, on hillsides and along the country-roads, you could count on the multitudes of its bright-yellow star-blossoms spread abroad in casual patterns. Its slender, round stem bears opposite leaves of simple pinnate design; each slender leaf-segment ending in a ± obtuse tip. Sometimes, the lower segments are branched. Long, often branching, floral stalks arise from the leaf-axils.

Blossoms in various stages of development keep the flowering procession poing. The bud and fruiting stages best show the involucre's double ring of bracts: the inner ones brown and ascending, the outer recurving from a shallow 'dish'. The five broad ray-flowers, each with two emphatic nerval folds, are ± oval, tapering slightly toward the three-toothed apex. The 'heart' of tiny disk-flowers is inconspicuous.

G *8 - Bidens pilosa var.radiata fina* - a Bur-Marigold - *ASTERACEAE* - SUNFLOWER FAMILY

Another common bur-marigold festooning waysides, meadows, and even Quito's golf-course, was during our residence this white-blossomed species; it is distinguished by consistently having eight ray-flowers. These have three longitudinal creases, each section ending in a pointed tip. The small golden center of disk-flowers sets off the pure-white oval rays.

The erect, greenish, round stem is hairy; the reddish leaf-stalks ascending in pairs, likewise, and even the reverse sides of the leaf-ribs. The light-bluish-green leaves have an angular

character - triangular to rhomboid - seen as a whole; but also each of their divided, toothed segments. All this combines as this wildflower's great decorative charm.

G 9 - *Bidens crithmifolia - a Bur-Marigold* - ASTERACEAE - SUNFLOWER FAMILY

when comparing this little 'clown' of a bur-marigold to the common yellow-flowered niachiag of Quito (G #7), we discovered that its foliage is far more complicated in its ferny design, and that these delicate, branched segments terminate in very sharp tips. Fine hairs are present at the pinkish petiole bases forming the leaf-axils.

The involucre's inner bracts ascend as a membranous, fringe-like unit, while the outer ones spread like green spider-legs. The blossom is usually larger than in the common species - *B.humilis* - and have 5-7 yolk-yellow ray-flowers with an orange-brown lower half, thus forming the darker center of the floral head. The disk-flowers make up the small composite'heart'.

G 10 - *Conyza gnaphalioides - ASTERACEAE* - SUNFLOWER FAMILY

Almost like a pigmy replica of typical high-moorland plants, this *Conyza* forshadows the practical form chosen by species of the genus *Culcitium* (Ch.6,DG #32,DG 37), whose wooly garments justify their standing tall and erect at their favorite altitudes of ± 3600-4600m. Although Quito's climate is considered temperate, it has its chilly nights and hot mid-days; so to resist these

extreme temperatures, this hardy little flower dons a gray-greenish-white protective covering running vertically from bottom to top, partially enveloping its alternate, ascending, slender, lobed leaves; these are bluish-green with a felty-gray mid-rib on the reverse (or outside).

The stem-less flower heads appear close to the top, breaking through the wooly threads. Each one looks like a straw-golden gem in a setting of deep-rose-crimson inner, 3-4-tipped, thin bracts, and an outer one of numerous pointed green bracts. Inside are 2-10 disk-flowers. These creamy heads have no ray-flowers. But at maturity, they open into white pompons like miniature dandelions - not as fluffy but more straw-like.

The 10-15cm-tall plants may have a short stem, then branch in a circular arrangement, but always ascending. The typical habit is the solitary, erect one. They grow in level, dry places, sometimes in eucalyptus woods, year-round; blooming richly from Feb.through July.

G *11 - Tridax stuebelii - ASTERACEAE* - SUNFLOWER FAMILY

Whether or not this graceful flower escaped from the great garden above Guápulo, it demanded to be portrayed; to us, it certainly was new. We found it among herbs and low shrubbery on a shady slope. It bloomed in Dec-Jan 1941.

The slim, round, short-hairy stem may stretch 40-50cm tall; it is green, turning to dark-purplish-red where the thin floral stalks of this rich coloring branch off. It has a typically open

appearance because foliage surrounds only its lower portion. The leaves are opposite, criss-crossing direction. Each one is a simple, ± ovate blade - broader just above its flattish, outward-curving stalk; the tip is long-pointed. The upper surface is yellow-green; the reverse side pale-green, decked with very short, adhering hairs.

The involucre's short-hairy bracts are set in two series - the inner ones higher. All are brilliant-green, a yellow border emphasizing their obtuse shape; often maroon-purple intensifies the 'lizard-scale'pattern. The blossom has 5-8, usually overlapping, broad ray-flowers - each flattened, and finely crenate on its end, two strong creases running into the narrower basal portion.The color is soft-lavender-pink.

The medium-size disk-flower cluster reveals to the naked eye the greenish-yellow floral tubes, the deep-purple-red stamens with greenish-white pollen; also the two-spiralled styles that are yellow and reddish-tipped.

We consider this a wildflower of feminine appeal.

G *12 - Onoseris hyssopifolia - ASTERACEAE* - SUNFLOWER FAMILY

The north-slope of Bella Vista - a favorite destination for horseback-riders in those days - hosted groups of this showy wildflower. They grew atop small pyramids left standing amongst 'globe-cancagua' which is a common type of terrain around Quito; it is solidified volcanic ash studded with hundreds of ancient scarab-'pills' the size of tennis balls. Here, a recent heavy

cloudburst had caused a wash-out, but the *Onoseris* clusters did anchoring work with their irregularly-snaky, partially above-ground, woody root-stocks. It was Jan.1941. In Feb., we found this species above Guápulo, and in that same month, near Cumbayá. A good year for them?

The whitish-green-gray leaf-shoots and floral stalks generally ascend in clumps. The lance-shaped, wavy or curving leaves also are clustered, ± alternating to whorled. Their upper side is green, grayed by fuzzy threads; the reverse, pale-gray-felty.

Often, the floral stems rise from the trunk, leafless; they may be from 4-15 cm tall, erect or recumbent and with dense basal foliage. The tall involucre consists of numerous tiers of staggered, pointed, purple-red, pale-fuzzy bracts. Nearly always, 13 slender ray-flowers ending in three sharp fringes each, spread horizontally, forming a very even pink star. This seems truly to shine because of the creamy-silver tint of the rays' lower third, thus setting off the small core of bright-yellow disk-flowers with orange styles and stamens. The pink ray-flowers have brown-red styles with club-shaped, orange stigmas. The rays´reverse side is dirty-salmon-pink, pale-fuzzy, and longitudinally-double-creased. This strap-like visible part is 2cm long.

G *13 - Helianthus sodiroi - ASTERACEAE* - SUNFLOWER FAMILY

Although this gorgeous wild sunflower seemed to be hiding amongst low shrubs and herbs, its large, bright-yolk-yellow flower heads gave it away. We came upon it in March 1941, on that

prolific, steep slope above Guápulo. The plant sprouts one to several sturdy stems ± 1-1 1/2 m high. These are round, grooved, tannish-soft-green, covered with white-gray,± spreading, wooly hairs. The upper portions may branch, and these are hollow, while below, the stems are filled with a white 'marrow'.

Alternate, stalk-less, ovate leaves dress the erect or curving stem from bottom to top; they are dull-green, somewhat light-hairy above; typically silver-gray-felty on the reverse side. Their midribs and ± alternate venations are pale-greenish-yellow, and their smooth margins have a tooth here or there.

The floral head's involucre consists of many overlapping green bracts with wooly-gray hairs. From them spread an average of 20 golden-yellow ray-flowers like long, two-nerved, elegantly curving tongues; they measure 2 1/2 - 4 cm (without the tubular portion of 1cm). The disk-flowers are orange. When sectioned lengthwise, the convex shape of the receptacle upon which the disk-and-rayflowers stand, is revealed.

An impressive sunflower to conclude this collection of tiny and small-blossomed composite species!

Chapter 4 (P):

ILLUSTRATIONS

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- In meadows and on slopes; common in "La Floresta" of Quito - Feb - April.
- 8 - 30 cm tall, erect. Flowers open toward noon.

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(Iridaceae)

P 1

Sisyrinchium tenuifolium
Quito Blue-eyed Grass


M3

. Common in measuring rapid [illegible] changes



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(Iridaceae)

Sisyrinchium micranthum

P
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Nemastylis grandiflora (Iridaceae)

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(Iridaceae)

P 4

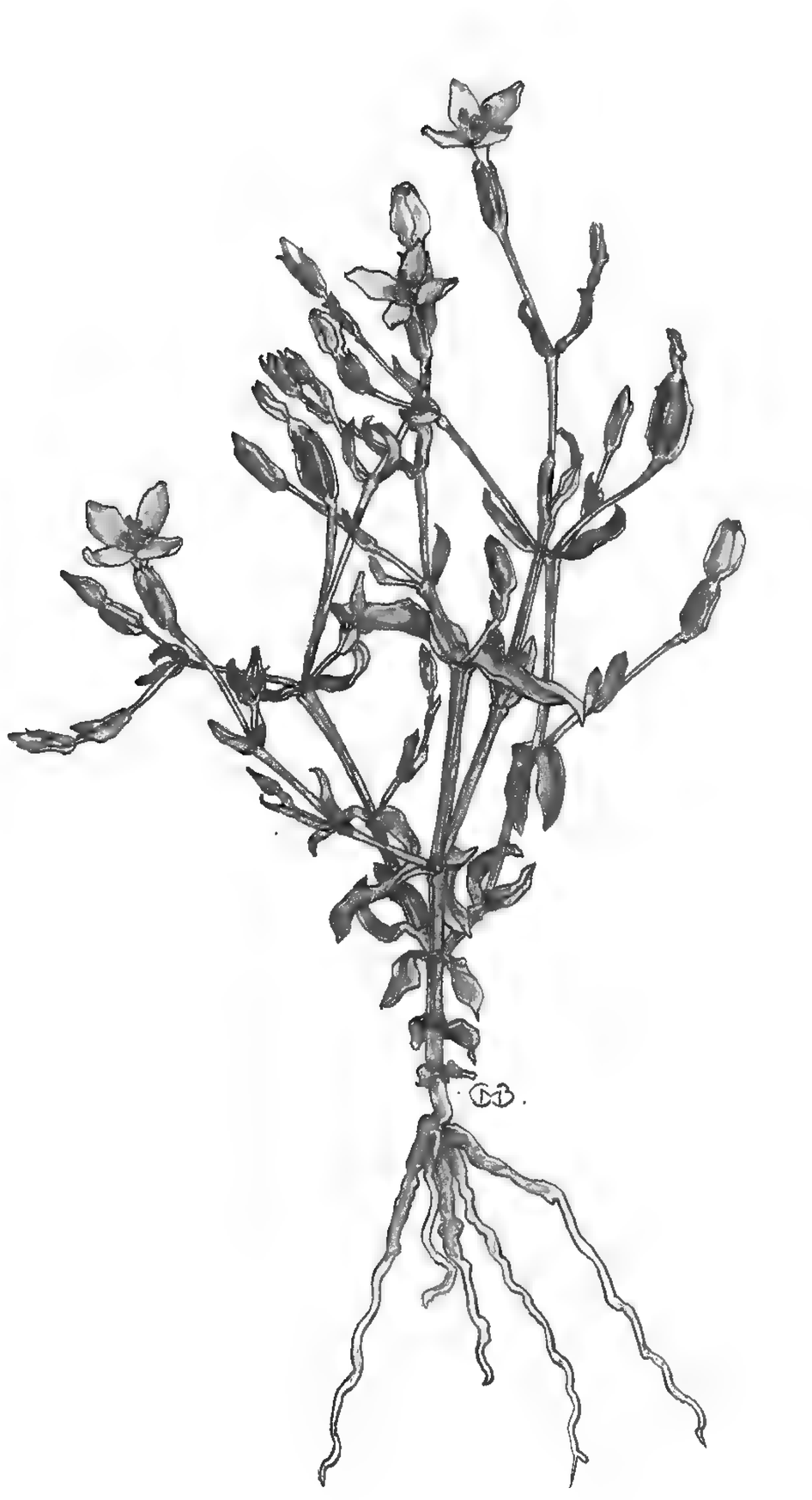
Nemastylis geminiflora



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(Primulaceae)
Anagallis caerulea
Pimpernel

P
5



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(Continuation)
Cultural
(Synthesis)

P 6

749



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(dedication)

church program

P 9

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- Common around Quito - in sunny places - roadsides, on walls or roadside shrubbery. All year.
- Also common in Baños - semi-introduced.
- Almost shrub-like. Stem very tough and flexible.
- Buds of leaves pale greenish, slightly pubescent.

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(Malvaceae)
Sida acuta
Burm.

P 10

30



- In meadows just below Smith - Simpson - blooming from Oct. - May.
- Open flowers in evening - stigma white. Next morning it is pink and gone. Flower 6 - 7 cm across.

(2)

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P
11

(Onagraceae)
Oenothera
tetraptera Cav.
(det. J. Wiesbrock)
USNH

124



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P 12



C: Shasta Co.

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(Onagraceae)
platanillo

Camissonia pterostraga
= Camissonia.

P 13
28


CB.

. Among shrubs - in shady, grassy woods or quebradas near Quito - Floresta. March and April.
. Often beside Geranium ayavacense.

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[Geranium] P 14
Geranium chilloense?



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(Geraniaceae)

Geranium cyaneaceae.

P 15

135.



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P 16

alfieri (Geraniaceae)
Erodium moschatum



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P 17



- Common around Quito. Loves shady roadsides or ditches. - February.
- Stems round, sturdy, succulent, slightly pubescent.
- Fragile plant

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(Oxalidaceae)
Oxalis

P
18

41



Duchesnea indica (Rosaceae)

6421-2
A6

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(Rosaceae)
Duchesnea indica

P
19

915



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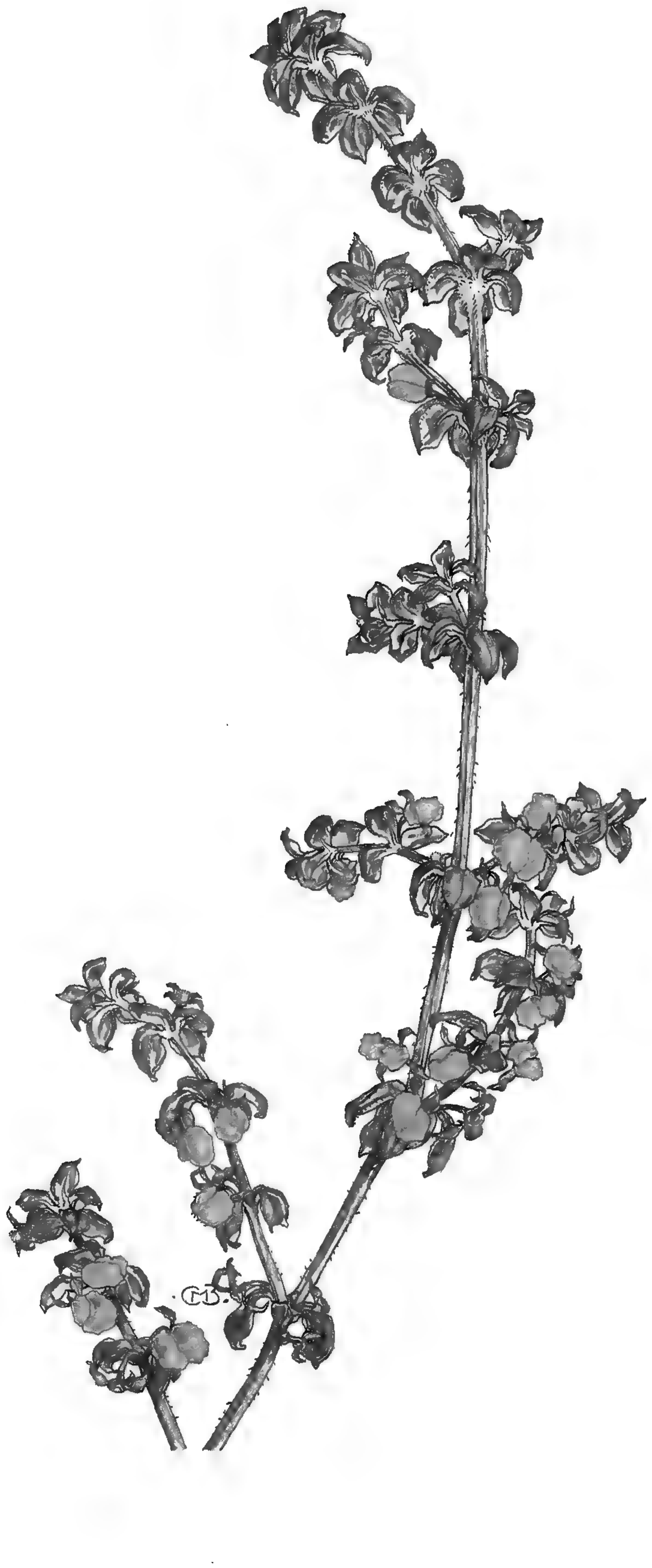
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274.



P
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(1)

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Relbunium
hypocarpium

150.



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(Asclepiadaceae) P 23

Cynanchum guatimale.

133.



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(Apocynaceae
Dogbane Family)
Echites assimilis
Kischnem.

P 25

202.



Physalis peruviana (Solanaceae)

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0421-2
A4

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(Solanaceae)

Physalis peruviana
Uvilla

P. 26



Nicotiana tabacum (Solanaceae)

P
27

(Solanaceae)

Nicotiana
tabacum

125

5

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MBP.

(Fabaceae)

uña de gato.

Mimosa floribunda.

P 28



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(Tabaccac) P

Lob... 29

iso (...)

Indigo Bush



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P 30

(Tricyrtis)
Tricyrtis
Veitch / Tare



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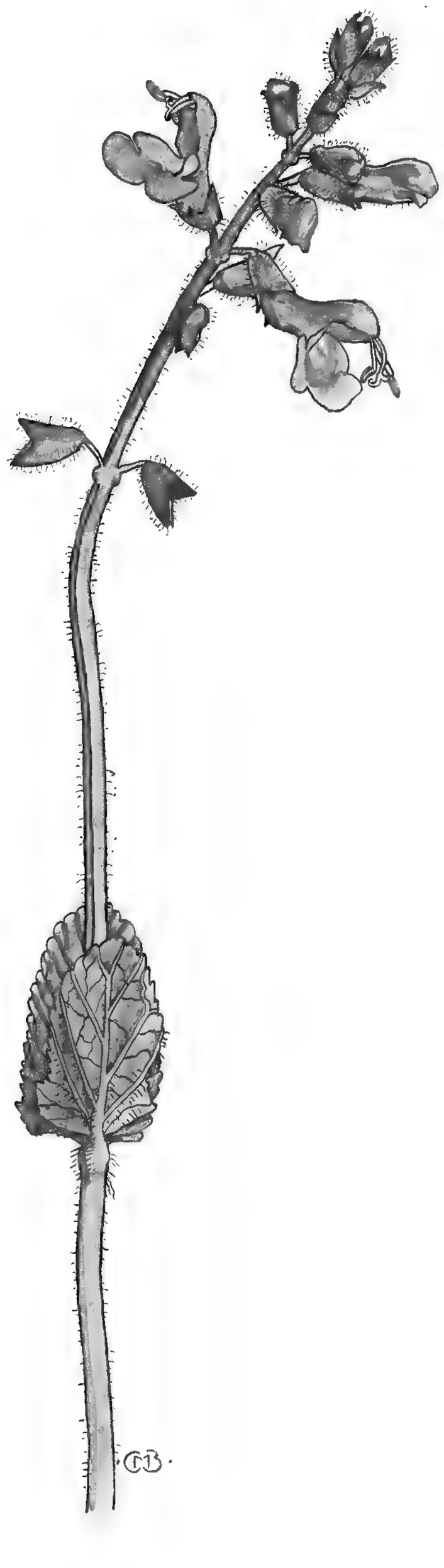
P
31

Hierba del angel
Desmodium canescens
70



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P 32

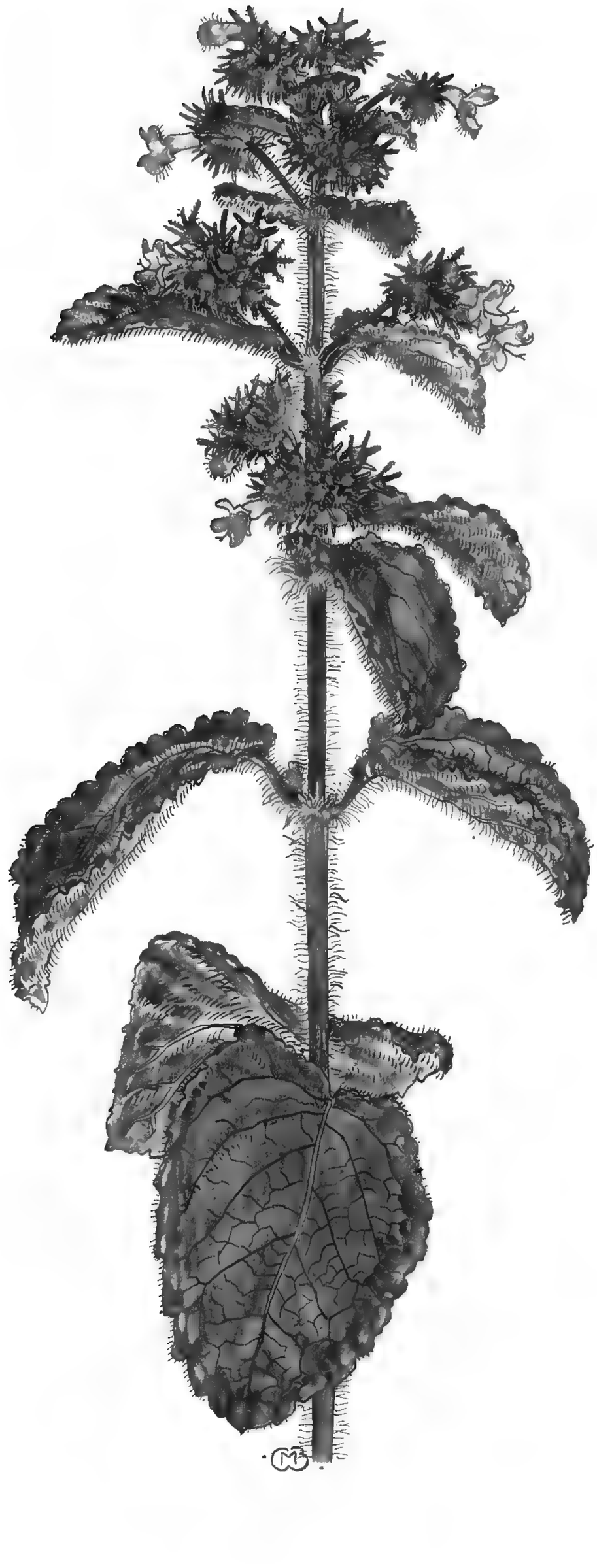


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Silvia [illegible]
Library Page

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(Labiatae)

Salvia grandiflora
tromptella

P 35

67.

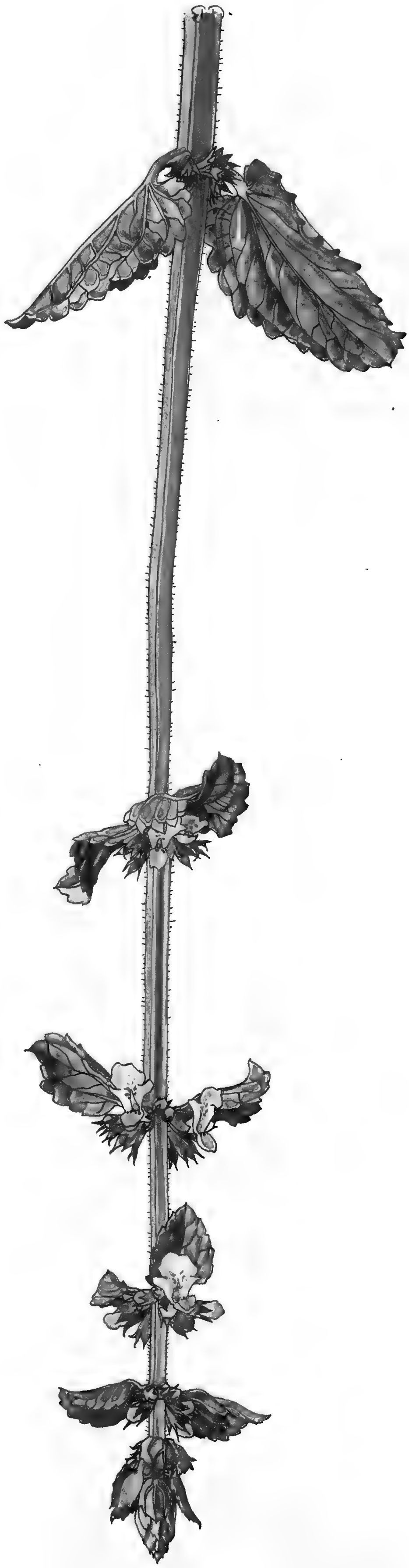


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Gardoquia fasciculata

1:10.



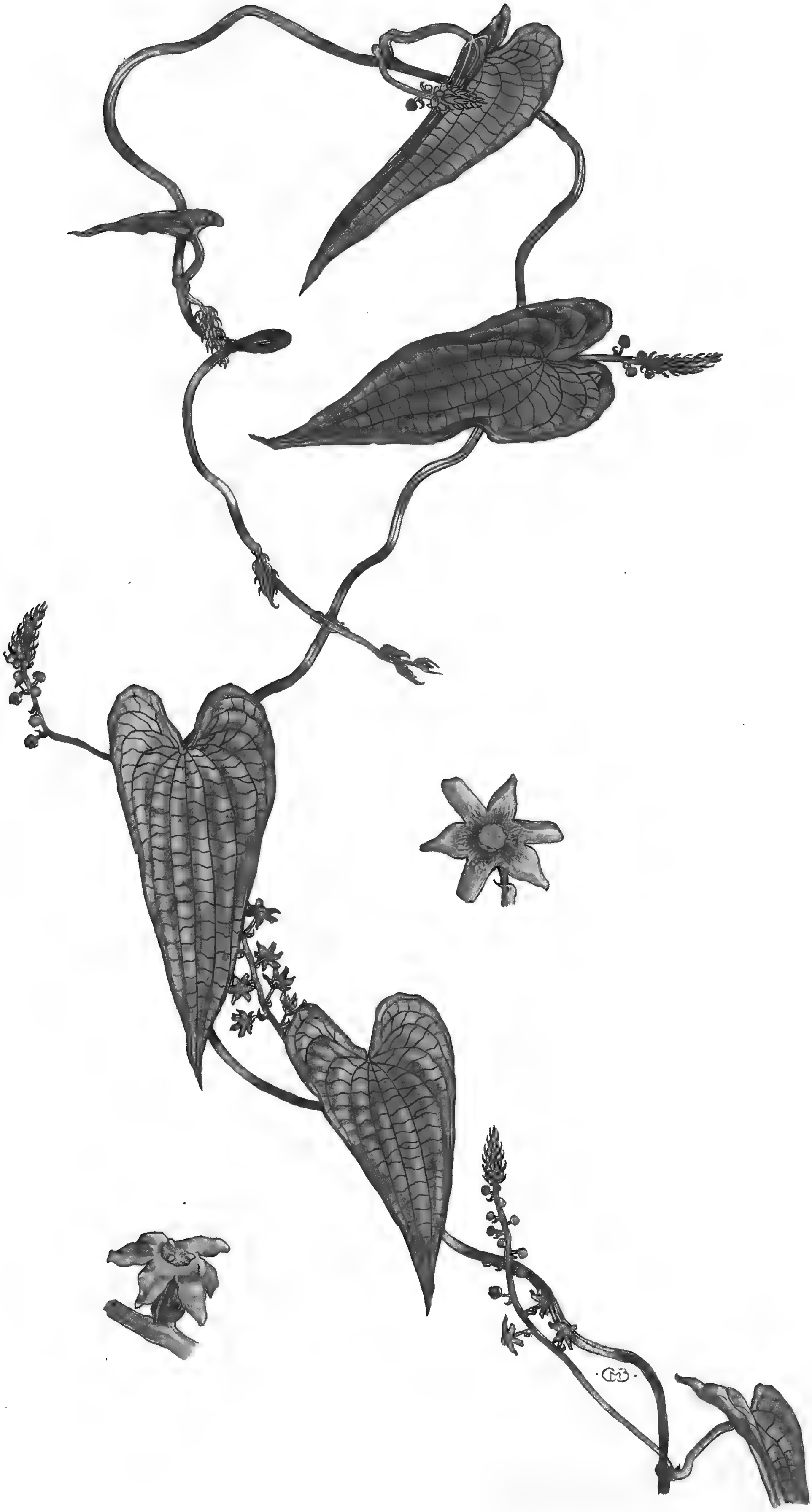
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(Labiatae)

P 37

a - Hedge Nettle

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P
38

Dissotis spicata

129.







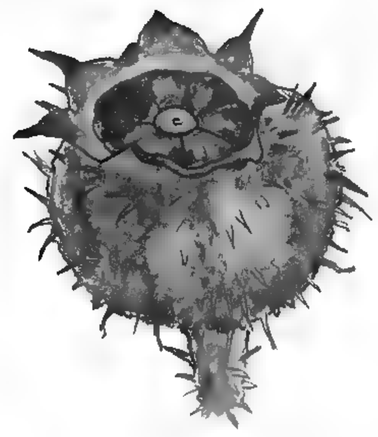


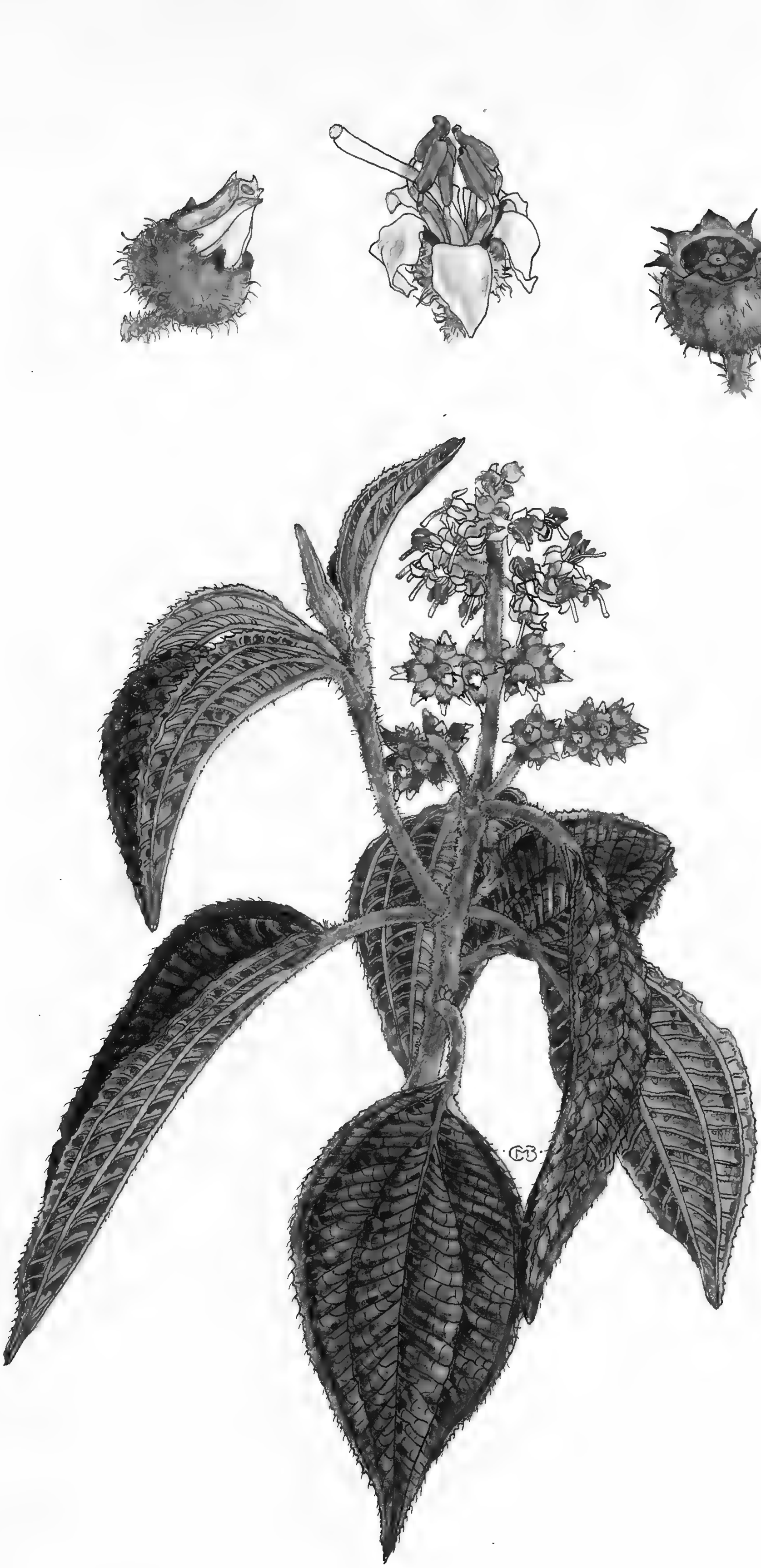
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P 39

(Coriariaceae)

Coriaria thymifolia (Shanshi) 179





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(Melastomataceae)
Miconia guitensis.

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(Polygalaceae)
"Ibidán"
Monnina xalapensis.

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165.



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Lodonaea viscosa (Sapindaceae)

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Chapter 4 (P):

PLANT DESCRIPTIONS

P 1 - *Sisyrinchium tenuifolium* - Quito Blue-Eyed Grass - *IRIDACEAE* - IRIS FAMILY

A typical representative in Quito's temperate climate, this modest blue-eyed grass is likely to be found in any meadows at ± 2800m, blooming from Jan-May.(Are there still natural meadows?)

At first glance, the slender, dull-green leaves look like grass blades. But quickly, the plant enthusiast recognizes their fan-like arrangement - flat, interlocking and rising from underground rootstocks.

From such a low-growing set of finely-parallel-nerved, thin-pointed blades rises an equally flat, even thinner, floral stem that tends to twist as it ascends. It can be from 8-30cm tall. At its first flat node, a spathe of usually two sheathing, sword-shaped leaves enclose one or two thin branches, each with a flat node and a short spathe or two. From here, the blosssoms appear, one at a time, their hair-thin pedicels remaining hidden, but the swelling, inferior ovary gradually emerging.

The flower is a six-lobed, soft-lavender-blue star that opens at mid-day to celebrate the equatorial sun at its zenith. The segments are almost identical, yet the three inner petaloïd ones a bit narrower. All are rounded off at the end and bear a boldly-hooked tip; they have longitudinal,violet tracery. The blossom center is lemon-yellow, surrounding the silvery-green stamen column with hairy-yellow base and crowned by three decorative yolk-yellow anthers. The whitish style protrudes with its three stigmas. The three-part ovary turns into a shiny-brown, ± club-shaped capsule. Seeds for new plants soon scatter in the wind.

P *2 - Hypoxis sp. - LILIACEAE* - LILY FAMILY

In March-April 1938 and during the ten years after, this charming miniature lemon-yellow lily abounded in practically all open meadows of blue-green grass around Quito - as if its leaf rosettes imitated the grass coloring. This meant built-in protection.

The small, low-growing plant sprouts from a perennial, nearly round corm with short, mostly branching, whitish roots. All the leaves are basal, sheathing each other alternately, spreading in graceful waves or arches. They are the size of grass blades, are folded in the middle and have irregular hairs scattered along their margins and some on the reverse side. Their bluish-green shows fine parallel veins.

The short, thin flowering stem - likewise with few hairs - bears a single, minute lily blossom. Its six segments are slender - the inner three being shorter and backing the three shorter stamens; the outer slightly longer backing the three longer stamens. The anthers are yolk-yellow; the glassy-green ovary with its tiny style is superior.

In closing, this gold-star-blossom raises and folds in first its outer three segments which have a tuft of delicate hairs at their tips (protective device?); next its three inner ones - the petals. All six are green on the outside with neat yellow borders. In this resting stage as in the bud stage, the yellow star is practically concealed but for the tell-tale yellow

margins. Such a secretive, exquisite little lily!

P *3 - Sisyrinchium micranthum - IRIDACEAE* - IRIS FAMILY

Quito's meadows, particularly of barrio Floresta, even though horses, donkeys and llamas grazed there, were rich with small wildflowers. During April-May, this attractive member of the Iris Family made its delightful display year after year.

It remains low-growing, often sprouting great numbers of flowering stems in dense clusters. These stems are flat with sword-like leaves ascending and hiding the various flatly-sheathing bases of each higher set in line. They adhere tightly, even seem to be fused above. All these parts are light-yellow-green. Also the secondary flowering stems (peduncles) come from a flat sheathing 'sword' spathe, considerably shorter than the lower leaves. There may be as many as six such stemlets, their flowers developing in succession.

The six-pointed, white star-flower has three somewhat wider outer, and three slender inner segments, all ending in fine up-turned tips. Delicate reddish lines streak into the purplish-red, then greenish-yellow throat which extends into a short, urn-shaped base, resting on the small, round, shiny-green, inferior ovary. On the outside, maroon striations stop just above the corolla base. The three stamens form a yellow tube which is broader at its base. The three anthers are yolk-yellow. The style remains low.

P *4 - Nemastylis grandiflora - IRIDACEAE* - IRIS FAMILY

This showy iris grew abundantly on the slope above Guápulo, especially in one narrow quebrada. Flowering time is from Feb.to end of May. This was in 1940-41.

The tall, green, round stem is slender, bearing slim,sword-shaped, luminous-light-green leaves that are folded and narrowly-parallel-pleated. The stem zig-zags from one leaf to the next alternate one. It terminates with a group of smooth oval bracts from which issue the flowers - sometimes as many as six of them in succession. Their individual floral stems are short, so that the wide-open blossom practically hides them.

The flower has the basic shape of a triangle: the three outer, larger lobes being rounded, and curving upward; the inner three smaller, pressing downward but pointing up their delicate claw-like tips. These petaloid ones each bear a white, blue-lavender-bordered fleck just above the sudden bend leading into the bowl-shaped corolla center. The entire blossom is soft violet-rose, delicately striate and silky.

The stamens form a yellow tube - brown-streaky, more slender above, and sporting three double, whitish, violet-gray-margined anthers. The style displays its three petal-like, toothed and divided stigmas. The inferior ovary matures into a three-part, club-shaped capsule.

P *5 - Anagallis caerulea* - Pimpernel - *PRIMULACEAE* - PRIMROSE FAM.

(5P) The blue-blossomed form of the well-known European weed - Scarlet Pimpernel - being less common, it clamored to be included here among the 'dwarfs'; because, in Quito's environs, it appeared to be a rare, precious little wildflower. I don't remember seeing the scarlet - or better: salmon-red-flowered plants at all at that time (1938-45). This lovely deep-blue variety grew - secretive and singly - under hardy bushes bordering a small incline meadow above Guápulo. I found it only on a very few subsequent occasions. It bloomed in June.

Its four-edged shiny-yellow-green stem is very slender, trailing, then erect; bearing horizontally-spreading leaf-pairs that alternate direction. These sessile leaves are more slender and longer (± 2cm) than in the scarlet pimpernel *(A.arvensis)*. Their tops are yellow-green, their reverse sides dull-green with golden-brown gland-like speckles.

Each leaf-pair sends up a pair of hair-fine floral stalks up to ±2 1/2cm long, each bearing a single flower. The bud with its five thin, pointed calyx lobes shows their being twisted to the right. When the blossom opens, the sepals appear star-like in between the royal-blue corolla lobes. These are rose-red at the base and may have a toothed apex. Their outside is pale-blue and pink. The five lemon-yellow anthers top the whitish-silken-hairy filaments that are inserted at the corolla base; they are violet-rose above. The rose-red style has a shiny light-green stigma. As soon as the small round capsule begins to form, the floral stalk curves downward.

P *6* - *Centaurium (Erythraea) quitensis* - Quito Centaury - *GENTIANACEAE* - GENTIAN FAMILY

During the dry summer months, the Quito plateau keeps producing brave little drought-tolerant wildflowers. One of these is the Quito Centaury. Its modest blossoms open only in the sun. It is easy to detect it as gentian-related. Although its stems and branches are thread-thin, they are quadrangular in cross-section; the simple stalk-less leaves come in pairs - very small.

In bud, the petals are twisted to the right - well above the tall, slim calyx which holds the narrow portion of the flower tube. There are four sepals and four petals. Occasionally, a blossom here or there may have five or six segments. The light gray-blue-green of the plant contrasts beautifully with the pink of the petals; their outside is paler or even touched with salmon-color. From the ± egg-shaped ovary rises the whitish style with two stigmas that are light-green-'wooly'. The four whitish filaments inserted on the corolla throat have twisted yolk-yellow anthers and extend above the stigmas. The shiny-green, elongate capsule within the clasping calyx continues to wear the shriveled petals for a top-knot.

It is a graceful, lacy herb - just the size for fairy-folk!

P *7* - *Margyricarpus setosus* - *nígua* - *ROSACEAE* - ROSE FAMILY

Quito's then surrounding meadows were typified (along with other shrubby plants) by this small member of the Rose Family at

practically all seasons. Its dark-brown, woody, richly-branching stems tend to be recumbent; they have closely-alternating, sharp, brown bracts from which sprouts tiny, needle-fine, pinnately-divided foliage, forming juicy-green clusters at the end of each branchlet.

Nothing resembling a rose or strawberry blossom strikes us, but numerous 2-4mm high, light-green, ± bottle-like florets sit singly or in pairs close to the stem, mostly in leaf axils. The calyx is ± egg-shaped, terminating in four diminutive points. In between them stand the four miniature, darker-green petals. These flowers are so inconspicuous that one has to scrutinize to locate them. Their camouflage works. The purpose for this secrecy I do not know, but - the multitudes of glossy pale-pinkish berries certainly prove that Nature's method functions here; they are bead-like gems indeed - each with four red pinpoint-dips and green floral remains. They compensate for the absence of showy blossoms.

P *8 Lysimachia vulgaris* - Loosestrife - *PRIMULACEAE* - PRIMROSE FAM.

A common inhabitant of Quito's meadows, especially of the Floresta area, this modest, low-growing herb bloomed richly from March through June (1940's). Its angular, short-hairy, erect stems vary from purplish-red to brownish-green. The stalk-less, lance-shaped, hairy leaves come in pairs.

The flower-bearing branches have widely-spaced, slender bracts, alternating to nearly-opposite in arrangement. Each bract

has two laterals just inside of it, and these three surround the green-and-dark-red calyx tube - slightly bent or reaching out. The floral tube is long, slender and spreading into five ± narrow yet rounded, pale-pink lobes,each with a reddish central tracing. Towards the throat and down the tube, the coloring is creamy-yellow. The numerous diminutive yellowish-white stamens are inserted in the upper portion of the tube. The green style comes from the low-set ovary, safely hidden away.

P *9* - *Anoda prostrata* - Prostrate Anoda - *MALVACEAE* - MALLOW FAMILY

Like many species of various genera of the *Malvaceae,* this delightful *Anoda* proliferates along waysides and in fields. In June-July 1941, its pink-purple flowers added great beauty to the open areas of Baños, Oriente. In reviewing the Quito field flowers, I am reminded of it here as a sister to *Sida acuta* - so common around Quito and also growing in Baños.

The roots of the Prostrate Anoda are thick, yellow, and with countless sucking rootlets. Generally, they send forth many trailing, round, green-and-red stems; these are sparsely hairy and red-glandular. The rich-green, basically arrowhead-shaped leaves have ±1cm-long red stalks and a red border clear around their fanciful large or smaller toothed lobes; also red-splotchy emphasis along the midrib. They are alternate.

From each leaf axil with two linear hairy stipules ascends one slender floral stalk with one flower. Its green five-pointed calyx is ± flat-open, holding the oblong-squarish, pink-lavender

petals in the spaces between them. The blossom has a tissue-like quality, striate and with silken sheen. Dish-like, it surrounds the white stamen column. The many anthers are white as are the knotty stigmas on the style branches.

The fruit has 10-15 ± triangular carpels, each with a raised central crest ending in a 'button' at the outside.thus forming a decorative disk sitting within the five wide-open, now reddish calyx lobes - pretty as a blossom. It splits from its center.

P *10* - *Sida acuta* - munchi - *MALVACEAE* - MALLOW FAMILY

No matter w h e n you visit Quito, you will find this mallow in bloom; w h e r e v e r you go, you will meet with it: along sunny roadsides, on slopes, amongst shrubbery, or on adobe walls in the heart of the city. Maybe I'm too optimistic? It certainly was so from 1936-'46, and the plant was likewise common in the subtropics of Baños, Oriente.

It forms bunches of erect, round stems - tough yet elastic. They are dark-purple-brown with pale 'frost'. They have alternate leaves, typically small, bluish-green above, pale-green and hairy on the reverse side; they are somewhat folded, showing clearly their 'fish-bone'ribs and the toothed margin terminating in a downward-pointing tip. The leaf-stalk is less than one cm long, curved upward and flanked by two long, slender stipules. From these leaf-axils arise the wire-thin, short-hairy, green to maroon floral stalks - one each, and with one flower.

In bud, the mostly three thin bractlets below the five calyx-

lobes are seen. The open blossom looks like a five-part-windmill of soft-salmony-yellow, its center decorated with a dark-purple-brown, high-glossy, half-moon-shaped blotch on each petal, finished as if with delicate stitchery. The asymmetrical, tissue-like petals are twisted (in bud), or overlapping (in open flower) - either to the right or left. The yellow stamen-column is split above into ±30 free filaments with flaky, yolk-yellow anthers; they spread like finest rays around the pistil with its ten violet-red arms bearing knotty stigmas. The fruit has ten carpels and remains enclosed inside the calyx.

P *11* - *Oenothera tetraptera* - *ONAGRACEAE* - EVENING-PRIMROSE FAMILY

One evening, we discovered a small sloping meadow not high above Guápulo and stood in silent admiration of its magic: it was covered with low-growing, large, pure-white evening-primroses. Next morning when I returned there to pick a perfect one to paint, not one was there - but yes - only their wilted pink remains! Immediately I realized why they were given their name. Although some species open in the morning, or even rebloom, this one is a 'one-night-only' kind. But it blooms year-round with the exception of the driest months - ±June-Sept.

The short stem is round, red or greenish, and hairy. It rises from a leaf rosette and has slender, alternate,dull-green leaves. These are crisped, even somewhat lobed and partially red-dotted along these vavy margins; a little hairy too, and with pale mid-rib.

When the exquisite white blossom opens, it measures ±6-7cm across; its four broad petals - divided by 4-5 fine nerves each - form a bowl that presents its eight whitish filaments with long, creamy anthers, and the long thin (greenish below) style with its four spreading stigma segments forming a light-greenish-yellow cross. The moments the flower pops open, the four calyx lobes turn downward, their tips remaining joined and again recurving; they are short-hairy and crimson-bordered. When the flower has had its evening and night - been fertilized -,the sepals, petals and inner parts all turn pink.

The long floral tube above the inferior ovary is not visible in this illustration. But it is typical for evening-primroses. The fruit is a four-part capsule, sitting with its slender red base in a leaf axil. It is swollen towards the top, longitudinally-sharply-ridged, red-edged and hairy.

P *12 - Oenothera virgata - ONAGRACEAE* - EVENING-PRIMROSE FAMILY

It is good to remind ourselves that evening-primroses are not related to true primroses *(Primulas)* but to clarkias and fuchsias. Most of them certainly are of a more ephemral nature - the flowers lasting one evening only - in some species perhaps an extra day.

This species - common around Quito - tends to grow tall stems, but sometimes trails them before ascending. They are slender, round, smooth and often half blue-green, half reddish-pink, longitudinally. From the lance-ovate, bluish-green leaves with

wavy margins and light-yellowish midribs rise the single flowers, or branches. The arrangement is alternate.

The flower is less than two cm across when opened to its typical bowl-shape. The four delicate roundish petals are luminous-pink.The eight stamens as well as the style are paler, but the four-lobed stigma is intense-rosy. The inferior ovary - later the ± club-shaped capsule - has four deep-pink ridges running downward. The red calyx(floral)tube bears four slender sepals that bend backward gracefully when the blossom has opened; they remain fused side to side, especially by the tips - in pairs opposite each other. When the flower has done its duty (pollinators included), it turns deep-crimson, and the sepals rise to bud-position, thus enclosing it again.

P *13 - Oenothera prostrata (= sinnata)* - platanillo - *ONAGRACEAE* -

EVENING-PRIMROSE FAMILY

Platanillo - the 'Little Banana' - is probably the most common of all evening-primrose species of Quito's terrains: fields, meadows, gardens, waste places, walls or steep slopes. Toward evening, its gorgeous, light-lemon-yellow blossoms mysteriously appear, wide-open, and they persist into the early morning when dew lies on the grass. As the day advances, one finds most of them closed, wilted and turned pink to orange.

The eight stamens are soft-yellow, while the style with its cross-shaped stigma is light-green. The four broad, centrally folded petals are dull-silky; the four slender, green-and-reddish sepals, turned downward in pairs - tips generally fused. The

calyx (floral) tube above the elongate ovary is soft-rosy-red, extremely long and thin, and short-hairy.

The round reddish stem is sparcely-hairy, annd so is the fruit - the feature that brought about the common Spanish name platanillo or 'Little Banana'. Indeed it is straight or curved and flat-topped - pigmy-banana-style. It is four-sectioned, hairy, at first red-purple-and green-streaked; finally truly banana-colored.

The alternate to whorled leaves are practically stalkless. They have the typical pale central rib of this genus, far-spaced lateral veins, a rich-green color and irregularly-lobed, but chiefly wavy, margins.

P *14 - Geranium chilloense - GERANIACEAE* - GERANIUM FAMILY

If species of the same genus companion with each other, this is certainly true of this geranium and the one beside it here on the plate (15). Both were common in Quito's Barrio Floresta, blooming in March-April 1941. Both tend to creep, ascend or hang - depending on the location.

This species has round, light-green, glandular-hairy stems. With long spaces between them, the leaves form pairs with fairly long leaf-stalks - likewise hairy. The leaves are deeply-cleft into five broad lobes that in turn have 3-8 scallops each - in a nearly circular arrangement with decorative venations; they too are glandular-hairy. At the leaf-axils, the stem is slightly swollen and fringed with several short, translucent stipules.

Here, the often long floral stalks arise - touched with red at their base as well as below the slender-sepaled calyx.

The small cup-shaped white to pinkish flower consists of five long-heart-shaped petals with translucent gray nerve tracings. With its five longer and five shorter, flat, sivery-greenish filaments and pale-yellow anthers and its style column split into five pale-yellow styles, it is a little miracle set in velvety green foliage.

The stork-or-crane-bill-like fruit opens by lifting up the five seeds, coiling them each inside an individual 'strap'- one of the style portions. These remain joined at the apex below their division. What ingenious mechanism for propelling the seeds far away!

P *15 - Geranium ayavacense - GERANIACEAE* - GERANIUM FAMILY

This attractive Crane's-Bill adorned the grassy ground of wooded slopes and shrubby quebradas around Quito, especially of Floresta; above Guápulo. Flowering was profuse during March 1941.

Its graceful, very thin, trailing stems characterize it - with their soft-green coloring, red touches near the nodes, and the grayish, usually four, upright stipules, where the leaf-pairs or clusters emerge. These stems look smooth; only close scrutiny reveals minutest glandular hairyness.

The leaves are small, palmately-divided into five parts with generally three pointed segments each. The leaf-stalks vary in length but tend to be short.

Not so the floral stalks - they are long, displaying a delicate white blossom each. The five sharp-tipped sepals peek between the five rounded petals marked with pinkish-gray nerves. The ten soft-green filaments - united at their base - taper to points and bear yellow anthers. The elongate ovary has five club-shaped styles.

By fruiting time, the calyx has closed around the 'crane's-bill'; this then turns from green to tan, getting ready to expose its seeds by coiling them upward, propelling them into the air. This picture shows that one of the ovary parts has already released its seed; maturity then turns floral stems and sepals brown or rose-red - such beauty in multiple metamorphosis and practicality!

P *16* - *Erodium moschatum* - alfiler - Pins - Scissors - Filaree - Clocks - Stork-bills - *GERANIACEAE* - GERANIUM FAMILY

The numerous common names of this genus indicate its popularity among the people of various countries. The reason for this must be the conspicuous form of its fruits: some people see needles and scissors, others the heads and necks of long-billed birds. *Erodios* is Greek for heron. This plant, like others of this genus, was introduced from the Mediterranean; known also of California and Oregon, it was found near Quito's golf course in the Barrio Floresta.

It resembles *Erodium cicutarium* (Reiherschnabel=Heron's-Bill - common in Germany) but has distinctly broad, rounded, toothed or

double-toothed, sessile, alternate leaf-segments to its long, sparsely-hairy, ± paired leaf-stalks. These are broad at their base and enclosed by generally one broad and two narrower, glassy-transparent stipules. The often tall, succulent stem may be decumbent below and generously surrounded by its dark-green, impressive leaves.

The floral stalk is long, reaching well above the spreading leaves. It terminates in a circle of transparent bractlets - much like the stipules subtending the leaf-stalks. Within them the four or five short, tannish pedicels present a blossom each - consisting of five slender, lavender-pink petals, held by five striate-green sepals that fill the spaces in between. The filaments are pale-green with yellow anthers. As soon as the petals drop away, the calyx closes its sepals around the needle-sharp fruiting style, as it grows out to its near-four-cm length.

The difference between these 'bills' and those of *Geranium* species is that in *Erodium* the five style segments do not curl upward to fire off their seeds, but hang on to them as they drop off, eventually spiralling them cork-screw-fashion into the ground. This phenomenon is one of Nature's amazing mechanisms for sure dispersal and deep planting with barbs along the spiral making uprooting difficult.

Have you made 'scissors' of two immature filaree fruits by poking one through the other - when you were children? And do you remember the multitudes of tiny cork-screws all around 'Herb Robert'?

P *17 - Gaultheria pichinchensis* - Pichincha Wintergreen - *ERICACEAE* - HEATH FAMILY

Truly, this wintergreen has chosen the slopes of Mt.Pichincha for its preferred habitat: in Aug.1945, we spotted it blooming richly, and much sturdier, growing above Pichincha's waterfall, than when in Aug'41, we had first found it in a sandy place near Quito, looking stunted with its creeping pigmy trunk. Its perennial roots and woody base allow it to adapt to these drier conditions. The red-orange (when young) to greenish stems, covered with long, yellow, silky hairs, sprout singly from the trunk, surrounded by brown bracts

The broad-ovate leaves are also hairy; they are dark-green, leathery, often blotched with purple-black. Their reverse side is pale-green, inconspicuously veined with reddish-brown. The 2mm-long red leaf-stalks curve outward, their arrangement being alternate to whorled.

The delightful small bell-shaped flowers are grouped in longish terminal bunches. The bracts from which they proceed, are roundish, light-green with reddish markings. The tiny, thin, red pedicels hold the white-and-pink or pink-and-rose flower bells in shallow, red or red-tipped calyces. Each bell is actually a narrow-necked 'urn' whose outward-bent tips show this charming blossom's fleshy consistency. Ten pinkish-wite, ribbon-like filaments are inserted at the corolla base. They slim down just below the double, gold-brown anthers. The stigma is rose-red.

The fruit is a broad, five-part berry, enclosed in the rubbery maroon to black calyx lobes, the thread-like remains of the style

yet in the middle.

The genus *Gaultheria* has the distinction of having almost totally encircled the Pacific Ocean, but is chiefly at home in the Andes.

P 18 - *Oxalis sp.* - *OXALIDACEAE* - WOOD-SORREL FAMILY

Quito's shade-giving hedge-rows used to be the favorite habitat of this in the 1940s rather common Wood-Sorrel species. Its English name is therefore nearly correct. Many oxalis do not grow in woods. Almost all of them are at home in Africa and N-America, but others originate in S-America's tropical as well as temperate regions. All have sour-tasting leaves; '*oxus*'= Greek for 'sour'. The sturdy round, succulent stem of this (yet nameless) one is silky-pale-green, reddish at the decumbent base.

The alternate leaves are subtended by variously-lobed, translucent sheathing stipules. Their yellow-green leaf-stalks are long, thin and straight; the three terminal ± long-heart-shaped leaflets are very sensitive to heat, cold, light or touch. Any such excess causes them to fold downward. They certainly do so at night. They are a muted green.

The floral stalks, rising from the leaf-axils, are even longer than the leaf-stalks, but less spindly. They may branch at the summit, or simply bear clustered flowers on thin, reddish pedicels. When the blossom opens, it forms - together with the five-tipped, somewhat hairy green calyx - an elegant tumbler or vase-shape. The five light-yellow petals are notched; They are marked with fine brown lines on the inside - toward the throat, and with red ones outside. There are five short and five long stamens, and five styles.

P *19* - *Duchesnea indica* - Indian or Mock-Strawberry - *ROSACEAE* - ROSE FAMILY

How delighted was I to find a wild strawberry in a wet grassy spot just beyond the Guápulo swimming-pool! But how disappointed when I nibbled one of the shiny-red, ripe-looking berries: it was paper-dry and tasteless. Even greater was my disenchantment when I learned that this species was not a native of Ecuador but of far-away India. It must have escaped from a garden. Most likely, many people have met with this decorative plant, that is used as ground-cover. I have since found it on the East as well as the West Coast - gone wild. In its habitat of my first discovery, it bloomed and fruited abundantly in Nov.1945-'46. What a glorious sight it made: rich-green, yellow and blood-red - a great expanse of it! This charming immigrant must be here included.

The green or reddish hairy stem trails, forming rooting runners like the true strawberry. Its leaves, too, have the 'strawberry-plan': three fresh-green, dull-shiny, hairy leaflets - the central one rhomboid, the latterals with the lower half extra-wide; their margins toothed or double-toothed. The 2 - 4.5 cm leaf-stalks are like the main stem; the 2.5 - 11 cm long floral stalk likewise. The alternate leaves rise from two pointed bracts. The five gracefully-sweeping sepals with their five three-lobed bractlets underneath, filling the in between spaces, are also hairy. The blooms with their five light-yellow petals around the 20 stamens, all held in this decorative calyx, look like tiny single roses. As for the berries - though small - they couldn't look more ideal: deep-red, high-glossy, almost globe-

shaped, their shiny-red seeds texturing the surface. Picture-perfect.

P 20 - *Tradescantia quitensis (jamesoni?)* - Wandering Jew -

COMMELINACEAE - SPIDERWORT FAMILY

The Quito environment and that of the lower altitudes of Guápulo and Cununiaco was - in the 1940s - ideal for this beautiful *Tradescantia*. It is indeed a 'wandering' plant: its long trailing stems venture in many directions, before the flowering shoots rise towards the light. It loves densely vegetated slopes and roadsides and blooms from Feb-June.

In many ways, it resembles the *Commelina* sps.#16 & 35 in Ch.1, but *Tradescantia* has a more regular flower; this one's three scoop-shaped, powder-blue petals are almost alike, and the three small oval, soft-green sepals have blue-translucent margins.

The stamens have blue filaments, three with long, light-yellow anthers, two with strangely-formed, granular ones. The hair-thin, short style has a round stigma. After blooming, the floral stalk retreats into its folded bract, thus sheltering the developing three-part capsule. This is light-greenish-yellow, one of its three parts broader, and the style remaining on top like a tiny brown hair. Two flower stalks are in each floral bract, to bloom successively.

Along the main stem, the alternate, lance-ovate leaves form stem-clasping, purplish-red-streaked, swollen nodes with a few short hairs on their margin. More leaves and folded floral bracts form within these axils.

This family is mainly tropical and warm-temperate.

P *21* - *Mimulus glabratus* - Monkey-Flower - *SCROPHULARIACEAE* - FIGWORT or SNAPDRAGON FAMILY

In the same wet habitat behind the Guápulo swimming-pool where the mock-strawberry (19) flourished, this water-loving species grew long, submerged stems which raised low, leafy, flowering shoots. It bloomed in early Nov.1945. The 4-6mm-thick, succulent, round stems are silky-green to reddish, bearing opposite leaves on pale, flat 1.5 - 2 cm-long stalks. The poslished, fresh-green, roundish leaves have irregularly-double-toothed margins and 5-7 parallel veins which branch occasionally - fitted neatly into their ± rhombic outer contour. This venation is strikingly rib-like on the bluish-shimmering reverse side.

Bearing one blossom each,the erect, reddish floral stalks spring from the leaf axils: a pair of flowers to a pair of leaves. They are spaced well apart on the main stem.

The five sepals form a tubular green calyx, sharply-pleated, the upper pointed lobe projecting beyond the others.The small yellow corolla tube has an inviting three-lobed lower lip with yolk-yellow 'brush' in the throat and red dots leading into it. The two upper lobes are raised. The pale-greenish style with two stigmas - the lower being longer - rises from the elongate, superior ovary. The two longer and two shorter stamens are the color of the style; they have very light-green-yellow anthers.

This small 'grinning face' flower has striking resemblance to our California species *M.guttatus.* The latter has even rounder

but sessile to stem-clasping leaves and more impressive, inflated corollas - often large - of identical color scheme as *M.glabratus.* There are some 150 mimulus sps., the majority in N-America. The entire Figwort Family with its 200 genera and 3000 sps. covers most of the globe's habitats.

P *22 - Relbunium hypocarpium - RUBIACEAE* - MADDER or BEDSTRAW FAM.

Common in quebradas around Quito, this small, fragile climbing herb attracts our attention with its bright-red-orange, shiny fruits instead of its flowers. It blooms and bears fruits simultaneously and may be found at nearly all seasons - in shady places. The slender, angular, brownish, somewhat hairy stems branch profusely, creeping extensively over the ground and often climbing high into the shrubbery.

The tiny fresh-green, shiny leaves form circles of fours, with occasional fives thrown in. The reverse leaf side is lighter, the margins are turned downward, the tips purplish; the total is hairy.

If ever a flower was diminutive, it is this one. It sits in a leaf-axil on a fraction-of-a-mm-stalk in a four-lobed green to reddish calyx.This may well be the corolla with the calyx lobes lacking? The brilliant fruits are made up of two parts - often irregularly formed. They have a rough, somewhat hairy yet glossy surface.

That coffee, quinine and gardenias as well as countless jungle trees belong to this same family, staggers the imagination.

P *23 - Cynanchum quitense - ASCLEPIADACEAE* - MILKWEED FAMILY

The Milkweed Family with its characterizing thick, milky sap is widely distributed in the warmer regions of N-and S-America as well as the Old World. *Cynanchum* derives from two Greek words that imply the 'power to strangle dogs'. Imagining this about this slender, climbing herb with charming, minute, bell-shaped blossoms, seems challenging.

According to Sodiro,1895, this is a type species of the Quito-Pichincha areas. It was also found between Ambato and Latacunga at comparable altitudes. It blooms and matures in Feb.as likely as in Aug-Oct. This delicate-looking plant sprouts from a smooth, slender taproot with very few suckers. Numerous hair-fine stems may ascend from that root. These form few branches, but all show the undulations of a twining plant without tendrils, especially at the top. The opposite leaves are simple, lance-shaped, pointing downward; they are shiny-grass-green, dull-yellow-green underneath.

The flowers nod from the leaf-axils in clusters of 2-4, each on a short pedicel. The brownish calyx spreads into five sepals. It bases the shapely purplish-red, shiny corolla-bell with its five recurving, pale-yellow-margined, slender segments. The light-yellow inside turns to lavender-red at the throat and is white-hairy within. The ovary is a long honey-tube with a short style and shiny-greenish-yellow, round stigma. This is surrounded by five broad, yellow, pale-tipped stamens. Each one has an arch-

like projection. The blossom has a delicate perfume. In bud, the petals are rotate.

Each ± 6-cm-long fruit consists of two beak-like parts, containing flat, oval, light-green seeds attached to a metallic-white, stringy substance. At maturity, this opens up, serving as parachutes when the wind lifts each individual spark of new life towards its prospective new home-base.

P *24* - *Stenandrium dulce* - *ACANTHACEAE* - ACANTHUS FAMILY

I could hardly have guessed that this lowly but precious wildflower belongs to the 250-genera-2500sps-family - the *Acanthaceae* - which most of us know in the form of the impressive acanthus with creamy flowers and decorative leaves. These had inspired early architects to design the Corinthian capitals of Greek temples. Many tropical shrubs of India, Africa and Central America comprise this family; they may have amazingly varying guises - as for instance this small, drought-tolerant, primrose-like flower in its temperate settings. We found it first in Oct.1939 on a dry slope above Guápulo; in July'40 and Oct.'41 on Bella Vista - both near Quito. It must be rare.

Its dark-green, ovate leaves form a rosette flat on the ground. They are somewhat hairy - especially the prominent, pale-greenish-tan midrib -, yet their margins are smooth or crenate. Several clusters of developing buds amongst pointed bracts are hidden between the leaves. Occasionally, two or three blossoms open at once, but more typically, just one occupies the rosette's

center. It appears like a five-rounded-petaled, spreading, pink blossom with white, then yellow, narrow throat. But invisible is the long, thin corolla tube surrounded by the five-sepaled, stalk-less calyx. The tube is slightly enlarged below the petal division: it is there that the stamens are inserted; the long style's stigma reaches into their midst.

To verify that some forms of this family look nothing like this species', compare with #14 of Ch.1 - *Aphelandra aurantiaca.*

P *25 - Echites assimilis - APOCYNACEAE* - DOGBANE FAMILY

The steep-sloping terrain above Guápulo always held treasure for us 'visual people' with innate love for Earth's vegetative coat. At the edge of the small meadow being home to the showy white evening-primrose (#11), we spotted the twining stems of this inconspicuous yet fascinating shrub, in 1945. It continued blooming through March. Again, we saw it flowering in Aug...

Its basal woody branches are resilient, the color of cork and covered with tiny wart-like entities; fresh shoots are green to purplish-red, still round, decked with short, white-shimmering hairs. They contain - as do all Dogbane Family members - white latex juice. So do all the parts of these plants.

The leaf-pairs, with long distances between them, come on pale-greenish leaf stalks; these curve upward and out, so that the long-heart-shaped leaves extend horizontally, usually with their tips downward. They are shiny-green above, pale-green to pinkish (when young), with mat-sheen, underneath. The pairs

proceed from a wreath-like, stipule-connected axil, and the floral stems, singly, likewise. Each of the latter branches into small clusters of pedicels with thin reddish bractlets. Each calyx's five creamy-orange sepals look like grasping fingers of a mini-hand, holding the flower tube. This is not long; of soft-greenish color, widening ± in the middle, and spreading into five overlapping, creamy lobes - each with a rose-red border on one side, a crisped edge on the other. These irregular petals open so far as to touch the corolla-tube's outside with their tips. Here it is that on the inside the five stamens with yellow anthers, and below them, wite'brushes', originate. The style has a green, pyramid-shaped stigma. The petals' inside is creamy to white with a lemon-yellow stripe usually on the left side, running into that same yellow of the tube's inside. This firm, waxy blossom's fragrance resembles that of a fine, ripe apple.

A tropical species of the genus *Echites* has showy, bright-yellow-and-red flowers (Ch.1,#19).

P *26 - Physalis peruviana* - uvilla - Ground-Cherry - *SOLANACEAE* - NIGHTSHADE or POTATO FAMILY

With delight I remember this'old friend'- so abundant all around Quito, and particularly as volunteer in our Floresta-garden: not only because of its visual charm, punctuated with golden blooms, but because of its tasty, sweet-tangy berries; these hang, invisible, each one inside a mysterious green lantern. This genus has ± 100 New-World species.

The Nightshade Family with its more than 3000 species

containing ± 100 genera, is economically very important to mankind: potatoes, tomatoes, peppers of all descriptions, eggplants - to mention a few. We all know too about the many poisonous plants - like the deadly nightshade *(Atropa belladonna*), and the loved ornamentals like petunias, and tree- and shrub-forms like datura. All are related.

Just about all parts of this uvilla (little grape), except the blossom, are hairy. The sturdy, round, olive-green stem may form many branches. The leaves on longish stalks are alternate; they are ± heart-shaped, dull-green with dirty-reddish rib-structure, fine inter-space venation, and a pale reverse side.

The flowers are axillary - one to a leaf (toward the top, the leaves tend to be opposite). The five lobes of the shallow, soft-yellow blossom are fused to form a five-cornered 'umbrella' with five pleats in between them; five dark-brown, semi-circular blotches inside cause the five bluish-green stamens to stand out. When the fertilized blossom fades, its brownish-purple calyx begins to enlarge, inflating to a nodding green 'lantern', its five slender tips closing to form one point, into which the dark, sharply-creased veins terminate.

Within, one 'little grape' matures to a dirty-orange color,. and a delicious tart sweetness. In that state, they are great to eat - raw or briefly stewed. The Indians offer them for sale in their small tiendas.

P *27 - Nicotiana tabacum* - tabaco - Wild Tobacco - *SOLANACEAE* -

NIGHTSHADE or POTATO FAMILY

P
(27) Just outside our garden wall in the suburb Floresta, two gorgeous specimens of Ecuador's Wild Tobacco waited to be portrayed and recorded. This happened in Oct.1940. We continued to find it in other locations, one being the Batán region.

Such a plant's ± 1m-high build-up is striking: caused by the very large size of the lower leaves, and the successive decrease of those densely surrounding the stem, all the way up to the blossoming summit. If there are branches, the appearance is less monumental - less regular.

The entire plant exudes a strong odor from its sticky, short-hairy covering. The robust, round, yellow-green stem has alternate leaves; these are lance-ovate with wavy margins; stem-clasping to ± half-way around. The flowers are clustered on short stalks coming from branchlets in the upper leaf axils.

Each irregularly-five-lobed, green calyx is ± egg-shaped, often slightly constricted below. The corolla is a soft-yellow-greenish, striate tube that widens just above its middle, then opens out flat like the rim of a vase with five pleated points. This fused-petals-portion is pale pink with delicate-rose mesh-design. Five long, greenish-white filaments inserted in the tube's widened portion, bear gray-brown anthers - each with a pale stripe. The stout long style is bluish-green and has a round blue-green stigma. Some corollas have four parts instead of five.

All America's tobaccos are the product of *Nicotiana tabacum* or its varieties and a group of hybrids. The liquid nicotine contained in their leaves is a potent narcotic, as is universally known and experienced. I for one prefer looking at the beautiful

flower trumpets and rich foliage to smoking the dried, prepared leaves that would upset my good health. Of course the tobacco industry is a lucrative one. Indian tribes, too, use tobacco smoke, but for sacred rituals. Nature gives us amazing choices - what to do with the multitude of her plant forms. Pollinating hummingbirds are fortunate in that their choice is the only right one for them: five narrow openings in the tobacco's floral throat lead to the nectar they need (with occassional tiny gnats thrown in); no one else can reach that deep down - perhaps a large moth or butterfly?

P *28 - Mimosa floribunda* - uña de gato - Cat's Claw - *FABACEAE (LEGUMINOSAE)* - MIMOSA Subfamily - BEAN or PEA FAMILY

This charming decumbent to climbing shrub-like mimosa must yet be common around Quito; in the 1940s, it formed extensive low thickets. Its numerous pink 'pompons' as well as its prolific growth gave rise to the specific name *floribunda*, while the Spanish and Englich names derive from its 'climbing feat' with small hooks present on the sturdier branches as well as the leaf stalks; these 'cat's claws' serve it well.

The greenish to purplish-brown stems are decked with tan, wooly hair. The alternate leaves have slender, often horizontal leaf-stalks that split into two short branchlets with pointed stipules. Each branchlet carries two leaf-pairs, the lower of which has an additional minute blade. Each individual, slightly asymmetrical leaflet reminds of the shape of a butterfly wing.

Their tops are shiny, their reverse sides dull and hairy. To protect the plant from drought or heat, all the leaflets fold downward, close together, to prevent loss of moisture. The leaf-stalk's base is flanked by two sharp-tipped stipules. From this single-leaf axil, usually two floral stalks ascend.

Each floral stalk bears a pompon-like head, consisting of the innumerable pink filaments and styles of the many incinspicuous florets in the deep center - each one being a whitish tube with four light-green tips and four rose-red spots under them - no showy corolla at all. It must be another strategy of this genus to prevent dehydration: the four long pink filaments with light-yellow pollen and the rich-pink style of each tiny blossom take care of inviting pollinators while its precious ovay is tightly packed with all the others.

Cat's claw may be found blooming year-round - during six months of rain and six of total drought. Though it looks fragile, it is sensitive only in its ability to instantly adjust the position of its leaflets; it is ever prepared.

This group of the large Bean Family occurs mainly in warm, dry climates.

P *29 - Dalea astragalina (D.mutisii* does not fit my descr.)- iso - Indigo Bush - *FABACEAE (LEGUMINOSAE)*- BEAN or PEA FAMILY

All around Quito - in fields, eucalyptys woods, on walls or along roadsides - this *Dalea* species forms richly-branching, shrub-like masses. It is a year-round companion to the wildflower

enthusiast. If this is truly *D.astragalina,* it is described by Diels as common also around Riobamba at 2700m.

The round, red to brown stem has tiny glandular protuberances, and is very tough and resilient. The leaves are alternate, pointing in various directions. On this plant, the leaflet pairs numbered typically 6-8, not counting the topmost single segment. (*D.mutisii* counts 4-6 pairs, *D.astragalina,* 8-11: Jameson. Probably, the numbers vary in individual plants of each species).

There is an elongate terminal flower spike to each leafy stem; it tends to have an untidy look because of the spent flowers below, with the brown bracts and calyces exposed. In between these and the spike's long tip of tightly clustered buds to open in succession, the bright flowers make a showing: The banner or standard (top or rear petal) is purplish-royal-blue below, white with two yellow-green flecks above. It is shorter than the wings (two lateral petals) and the keel (two lower ones leaning together); these latter four are also rich purple-blue on the visible side, white on the inside as they are all folded side to side. In the maturing blossom, the banner turns to rose-crimson.

This genus has over 100 sps in N-and S-America. The name comes from T.Dale, an early English botanist.

The Bean Family - being one of the greatest and most varied in genera, appearance, economic and nutritional importance, is spread all over the globe with its ± 17000 sps. The butterfly-like ones like peas and lupines usually like temperate regions. This applies to our *Dalea* genus.

P *30 - Vícia graminea* - Vetch, Tare - *FABACEAE* - BEAN or PEA FAM.

Judging by how common it is, this vetch is likely to be an endemic, temperate S-American species. Nearly all through the rainy and dry seasons, its graceful leafing and flowering stems are seen climbing amongst Quito's shrubbery. This was in the 1940s. Diels reports it from Central Ecuador, Prov.Chimborazo, at 3400m, July 1933...

The thin, four-sided, green stem is elegantly trimmed ± every three cm of its length with alternate, slender leaf-stalks, bearing usually three pairs of grass-fine leaf-segments, and terminating in a hair-fine tendril; this may have several spiralling branchlets. A tendril is a very efficient climb-pull device: the moment it makes contact with a neighboring plant portion, this is the stimulus it requires to slow down the growth-rate on that inside, causing the tendril's curve to form as its outside progresses at the faster rate. It may quickly tighten to a firm grip.

At the base of each leaf-stalk, the typical 'vetch-double-arrow-shaped' stipule pair is present. Those nearer the vine's upper portion, where slim floral stalks sprout, may be of simpler design. There are 3-5 blossoms in open arrangement on each axillary floral stalk.

The green-and-soft-reddish calyx has a longer lower segment among its five pointed lobes. It sits on a very short pedicel. The blossom's five petals are pinkish-lavender, the broad banner sometimes turning deep-crimson-purple. This has a white fleck on

the way into the throat. Banner, wings and keel are ± the same length - banner perhaps a trifle longer. This choice small 'pea-vine's thin leaflets look so alive when they straighten towards the sun. Indeed they are constantly changing position: at mid-day, they begin to close; at night, they droop. Most members of this great family express similar sensitivity.

P *31 - Desmodium canescens* - hierba del angel - *FABACEAE* - BEAN FAM

In characterizing the meadows in and around Quito between 1937 and '45, hierba del angel could not be overlooked: like a delicate network, its thin stems trailed through the grass. It was very abundant. I wondered about the common Spanish name, but no one knew. However, native Quiteños gave me the very special term for that which this somehow 'angelic' herb insists on giving to everyone who walks by, inadvertently touching it: 'amor seco'- 'dry love'- its very adhesive pods. These, when you want to remove them from your socks or other garments, stick tenaciously; rarely does the entire deeply-constricted pod pull off - rather one or two sections of it only - each containing a seed. What perfect dispersal method! The pod's terminal hook has its play in this too.

The slender, red, hairy stem has alternate leaves, consisting of a ± 1cm-long leaf-stalk - reddish, hairy, spreading from two yellow-brown stipules. There are three small, shiny-green, roundish leaflets with even 'fish-bone' venation. The hair-fine floral stems come in pairs from a single-leaf-axil, or form an

open terminal spike. The tiny brown-red calyx presents the bright purplish-rose corolla: the broad banner with a tannish, dark-bordered fleck in the throat; the long, narrow wings and keel - looking like one upright petal. With age, this lovely small blossom turns turquoise-blue.

Like most plants in the Pea Family, this herb is extremely sensitive - it refuses to be a pretty cut-flower. But in the meadows, its luminous blooms and particularly its pods appearing like strings of from 3-6 green, reddish-bordered, flattened beads, are very attractive. It is part of Quito.

P *32 - Coursetia grandiflora (dubia?) - FABACEAE* - BEAN or PEA FAM

Again, the slope above Guápulo surprised us with a plant we had never seen before - this time in the eucalyptus forest, in Nov.1940; right through Dec-Jan - during Indian Summer or 'veranillo del niño - it kept on blooming to the end of March: the showy *Coursetia grandiflora.* With its soft-green, round to here-and there-grooved, solid stems it spreads to low shrub-size. The stems' dull appearance is caused by dirty-brown short-hairyness. The leaves are alternate, consisting of thin leaf-stalks - actually mid-ribs ±7cm long, with 15-18 pairs of small, slim-ovate, silky-dark-green leaflets. Their reverse side is velvety-pale. The species reported from Riobamba in Jameson, and Diels - *C.dubia* - has up to 30 leaflet-pairs to each leaf, is a bush to 2m tall, but otherwise sounds like our 'large-flowered' one here; in it, the blossoms are likewise in spikes of ±15,

whorled to alternating, as they are described in *C.dubia* .

The flowers of *C.grandiflora* have short, fine, dark-green pedicels, a greenish-brown five-sepaled calyx - its two top-lobes very short. The banner is very broad, rounded, spreading - pink, marked in the throat with a lemon-yellow-bordered, bright-chartreuse, shield-like design. The pink wings are small, as is the keel with its white, pink-striate outside. The pink is deep-rose in the young flowers and shiny buds. The older blooms become nearly white, but retain hair-fine pink, radial tracery. The banner's margin is rolled forward slightly - a typical landmark. The greenish style has a pale stigma. The fine, light filaments bear brownish-yellow anthers.

Besides being gorgeous to look at, these smooth, rounded 'pea-blossoms' have a delicious sweet fragrance.

P *33 - Salvia pichinchensis* - Pichincha Sage - *LABIATAE* - MINT FAM.

One of my early 'portrait models' was and is the very common Pichincha Salvia - a robust, somewhat shrubby plant with tall stems, offering its impressive deep-ultramarine flowers to beas and hummingbirds amongst the supporting brush. Those plants growing less sheltered in the full equatorial sun, tend to have lighter-cobalt blossoms. The sweeping short corolla-tube's upper lip forms a shallow hood from which the long lavender style and stamens project downward. The anthers are yellow. The spreading three-lobed lower lip is marked with white stripes leading into the throat. The calyx has also two 'lips', but these consist of two upper short tips combining as one, and two lower, slightly longer pointed ones. When the blue blossom has dropped away, this now flattened calyx looks like a small flag - its upper 'band' purplish-red, its lower, green. It 'flies' out ± horizontally on its ±2mm-long, slightly raised pedicel. They come in pairs.

The green to purplish, round to angular stem, the calyces and reverse side of the leaves, are glandular-hairy. The paired leaves are ovate with roundish top and straight, broad base, but practically without leaf-stalk. They are a soft-gray-green with marked rib-and-vein structures on the reverse.

All around Quito and ascending toward Pichincha, this species was a familiar sight. It also bloommed for us around Baeza, Oriente, when we passed through there in Jan-Feb. According to Diels, it is at home also in the mountain jungle of Tipococha, at 3200m; it bloomed in mid-Aug.1933.

P *34 - Hyptis polyantha - LABIATAE* - MINT FAMILY

Quito as well as Guápulo and other regions between 1400 and 3000m - Loja and Huigra in Prov.Chimborazo, to mention a few - are fertile ground for this strongly aromatic herb of the Mints. (June-July 1942). It prefers sloping terrain with sunny exposures since it is densely covered with protective, long, pale hairs.

Its slender four-edged, green-maroon to purple-red stem is erect, often forming variously-branching, shrubby plants up to 1.5 m tall. The broadly-ovate, richly 'sculptured', deep-green leaves with downward-turned, double-toothed margins are pale-green with white-furry hairyness underneath; without the short, thin leaf-stalk, they measure 2-8cm. They are set in pairs, criss-crossing directions.

The small flowers in tight clusters on thin, purplish floral stalks, arise from the leaf axils. Each tiny calyx has five thin,deep-violet-brown yet pale-hairy sepals. The diminutive corolla tube is rich-lavender, its two-lobed upper lip with a white fleck. The three-part lower lip has on the outside purplish-red hairs. Just below the middle lobe is the typical sac of the genus *Hyptis*, which contains the two pairs of fertile stamens, the upper of which is shorter; all four filaments are pale-lavender with gray anthers. The purple style has a forked stigma.

The ± 350 New-World species of this genus are spread all over S-America. Every one has its spicy aroma to offer; *H. polyantha*

here described says,"like peppermint, but not quite - it's more refined."

P *35* - *Gardoquia grandiflora* - trompetilla - *LABIATAE* - MINT FAMILY

This 'Little Trumpet'-bush remains low; it grows on steep slopes or in quebradas around Quito. Its scientific specific name describes its 'large-flowered' nature as compared with the majority of species in the Mint Family with their typically small, densely clustered corollas.

The stems are round, woody at the base, richly-foliated with small, roundish, opposite leaves. Their tops are shiny-yellow-green with slightly downward-turned margins that show a few blunt teeth. The reverse side is pale bluish-green due to velvety hairs, and the rib-structure is coarsely net-like. The flowers sit in the leaf-axils on very short pedicels - a pair to a pair.

Each trompetilla sweeps forward from a slender green-striate calyx; from the outside, it looks indeed like a muted-orange to salmon-red trumpet. This terminates in a small, notched upper lip, and a three-lobed lower lip. The tube's inside is light-yellow, and its four lobes are sprinkled with purplish-red and have pale-red borders. The long style has the distinguishing 'snake-tongue'-stigma. The stamens are unequal pairs. These trumpet-blossoms are covered with short hairs. The plant has a strong, pepperminty scent.

P *36* - *Gardoquia fasciculata* - *LABIATAE* - MINT FAMILY

(36) During May, June & July, Quito's various habitats - particularly towards Pichincha's skirts and the Batán Barrio - were ideally suited to prosper flowering profusion of this 'gem-studded' bush. This was so between 1938-45. Only a tiny twig of this generally shrubby plant is shown here, since too much could have led to confusion. The slender, woody, violet-tannish-gray, four-edgy stems are densely set with tiny, linear-leaf clusters - hence its species name *fasciculata* ='bunched'.

The flowers are likewise clustered, though in a different way: they appear in elongate terminal spikes - rose-lavender 'pyramids' of crowded corollas that contrast vividly against the green miniature foliage. Each ±1cm-long flower-trumpet emerges from a five-lobed, tumbler-shaped calyx. The corolla-tube's inside is paler-lavender than the outside; so is the large, three-lobed lower lip with its near-white area at the throat with red-purple sprinkles. The upper lip is short and notched. With age, the corolla turns a deeper-rose-purple, while the young buds are greenish-white to palest-pink.

The two longer and two shorter whitish filaments have two-part, carmine-red anthers with white pollen. The style is also whitish but with carmine-violet, forked stigma. The lower floral wall just inside the throat has small white hairs.

Again, 'Mother Flora' has devised a perfect design for this plant's needs - and those of its pollinators. All this is no doubt already recorded somewhere - but let us joy in our own discovering!

P 37 - *Stachys elliptica* - a Hedge Nettle - *LABIATAE* - MINT FAMILY

Like most hedge nettles, this species likes shaded spots amongst other herbs, shrubs and trees - often roadbanks. It was common around Quito, blooming ± year-round. We found it also in Saloya at 1850m, in Aug.1940.

'Stachys' is Greek for an 'ear of grain', implying a 'spike'.In this species, the long, thin floral spike is generally a strikingly 'interrupted' one - the stem spaces between each leaf-pair with a circle of flowers being considerable. This is partially due to the plants' stretching tall for more light. In any case, whether normal or forced, it is a monumental herb.

The square, pale-green, shiny, fine-hairy stem is hollow - candle-erect. The paired leaves, alternating direction, are fairly small. Each leaf is a neat ellipse, emphasized by the rib-structure; but the base is ± heart-shaped with a short leaf-stalk; the margins are coarsely-toothed. The color on top is dark-green - like a silken quilt; on the reverse, pale-gray-green. In the leaf-axils, six ± sessile calyces find room to surround the stem; these are like tall deep-purple to greenish cups - each flaring into five fine points.

The six flowers in a whorl do not always bloom simultaneously, but some may be flowering in each of a number of whorls. The pink corolla-tube's small upper lip is like a shallow hood. The lower lip is long with a broad ± angular central lobe and two slender, sharp-tipped lateral ones - all three reaching forward. Towards

the throat, white lacy patterns and rose-red speckles make this blossom as showy as that of an orchid. But - you need a magnifier to see the absolute perfection. The shape itself is fantastic. The tube's inside is pinkish-white. Two longer and two barely shorter pinkish stamens have black-and-white anthers. The whitish style has a divided, pink stigma.

P *38 - Dioscorea sprucei - DIOSCOREACEAE* - TROPICAL CLIMBERS

Here is a member of the all-tropical (though found in temperate Quito) *Dioscoreaceae* Family of 630 sps. of nearly all perennial climbing plants with tuberous roots. A well-known example is the delicious sweet yam, being - like this species - of the genus *Dioscorea*. As suggested above, there are a few exceptions regarding their climatic preference: here is one! Diels even reports it from Tipococha's high-mountain-forest in the Province Chimborazo, at 3250m, in 1933. We discovered ours on the slope above Guápulo, at ±2800m, in a shady eucalyptus woods, twining upward from a group of yellow-blooming *Tagetes*, in Jan.1941.

The very thin rubbery stem winds clockwise, often to astounding heights. The alternate leaves are spaced far apart, each subtending a thread-fine floral stalk. Each leaf-stalk is grooved and wavy, its gorgeous fresh-green, long-heart-shaped, very pointed blade having ± 13 parallel veins with net-like cross-venations, and its simple margin bordered with red-violet. All the leaves point downward.

Each floral stalk has a long spike of diminutive whorled flowers rising from simple bractlets. The vine here shown bears male flowers showing the six orange stamens - the lower three barely visible - in each 4-5mm-wide, six-pointed blossom. These are - as in the Lily Family - sepals and petals combined. They are shiny-purple-maroon with dark-red lines on greenish, radiating from the center.(See enlargement on the right). A female flower is shown on the lower left with its flat green style, three stigmas, and the swelling inferior ovary (also magnified).

Each portion of this vine combines as delicate perfection.

P *39 - Coriaria thymifolia* - zhanchi / shanshi - *CORIARIACEAE* -

CORIARIA FAMILY

The Coriarias form a family of one single genus. They are distributed in the warm-temperate zones of Chile, Perú and Ecuador; also in the Mediterranean region, the Himalayas, Eastern Asia, New Guinea and New Zealand. *C.thymifolia* here is the only species found in Ecuador - throughout the country's higher elevation habitats (± 2500-4000m). We chose a specimen from Quito above Guápulo where it bloomed and fruited in July 1942.

These dacorative, hardy shrubs with boldly arching branches are common along quebrada rims, often forming sheltering 'umbrellas' for other plants. Their base is woody; the stems are tough, 4-6-angular, green to reddish-violet. If the stem is four-sided, the branches proceed in criss-crossing pairs; if six-sided, they come in threes, likewise alternating direction. Since

the branches are densely arranged, with the upper ones being shorter, the typical frond-like appearance results. Each small oval-heart-shaped, smooth green leaf has three, occasionally five, veins coming from the sessile base. These red-tipped leaflets are also closely set.

The small flowers are arranged grape-like on gracefully bending floral stalks, sometimes along with leaflets. They are whorled, with a slender bractlet subtending the individual blossom's pedicel. The five pale-speckled, purplish, rose-red-bordered sepals barely show the five small petals in between them. To the lower left, we see a young flower, its five styles protruding. The middle enlargement shows a maturing blossom, its styles already shrinking while the ten greenish-pale-yellow, maroon-tipped anthers have grown out visibly (their thin filaments don't show). All this points to a procedure preventing self-pollination.

The detail on the lower right shows the five-part mature fruit enclosed by the now enlarged, succulent, shiny petals and the ± half-way-reaching, by now dark-brownish sepals. Small though these fruits may be, their juice is a great substitute for common writing-inks. But they are poisonous and narcotic. Beware!

P *40 - Miconia quitensis - MELASTOMATACEAE* - FAMILY of *Dissotis & Medinilla*

Quito, too, has its representative of this wide-spread S-American plant family, consisting chiefly of tropical shrubs, trees, vines and herbs. But a few - like this one - have adapted

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to higher altitudes (see #15, Ch.6). Often a sizeable shrub, this species is common in the quebradas splitting Pichincha's skirts, as well as in the area above Guápulo. The one illustrated here bloomed and fruited in July 1942.

The woody branches sprout innumerable more tender ones, yet of rough-wooly, cork-colored appearance: They are greenish to gold-brown-fibrous with a few longer hairs sprinkled in. The 1cm-long leaf-stalks of like looks as the branches - though thinner - spread ± horizontally, so that each gorgeous pointed-ovate,± 8cm-long leaf curves down. Because of the blade's five main ribs running from base to tip, and the 'fish-bone'-venation connecting these, it looks like a dark-green to purplish silken fairy-quilt of fanciful cut and pattern: the net-structure between the 'fish-bones' creates a multitude of tiny humps, each with a central pointed hair. Each fine tooth of the leaf's margin, likewise, ends in such a hair. The reverse side is mat-green hairy with prominent tannish, parallel ribs. The leaves are criss-cross-opposite.

The small blossoms come in terminal clusters. Each yellowish-light-green calyx with shaggy hairs looks like a round pot with 5-7 fringe-like tips. At maturity, this turns to rose-purple:(see the enlarged details - upper left & right). In bud, the five, sometimes six, streaky-pink petals twist to the right. When opened, they turn backward, showing their silken-white, longish shapes. On greenish-white, flat, wider-based filaments, the ten yellow anthers point toward the center, their small openings nearly touching. The simple style protrudes, showing its widened

upper portion's glassy whiteness, topped by the small soft-green stigma-head:(see top center detail). The capsule has many seeds.

(Compare with two tropical species - #15 & #20,Ch.1).

P *41* - *Monnina rupestris* - ibilán - *POLYGALACEAE* - POLYGALA FAMILY

About 1000 species comprise this almost world-wide family with *Polygala* as the genus claiming some 500 of these. *Monnina* is one of the ± 17 genera. All of these have blossoms that at first glance resemble those of the Pea Family with butterfly-like wings. But the 'wings' in polygalacious blossoms are part of the calyx instead of the corolla proper. *M.rupestris* here is a shrub of the Quito-Guápulo habitats. It also occurs in various other regions up to 3200m - usually among mountain brush - as in the Province Chimborazo.

Its smooth stems are soft-green to purplish-streaked, grooved and alternately-branched. The leaves, too, are alternate, with some of the lower ones opposite. They are long-oval, smooth-margined, shiny yellow-green above, dull on the reverse side, slightly fleshy. Their lateral venation is widely-spaced. The leaf-stalk is diminutive - its swollen base commonly touched with red. The small flowers make an impressive showing because of their spiked or clustered arrangement as well as their fantastic shape and rich coloring:

The deep, luminous purple-blue is partially the lobes of the calyx - the rounded lateral 'wings' and three small 'uppers'. The corolla's lower 'lip'is a broad, deep-blue scoop, gathered in

three folds with yellow ends. Inside these hide the soft-green, upward-curving style with elongate stigma, as well as the eight hair-fine filaments bearing orange anthers. Around the style and inside the upper petals are brushes of white hairs. The fruits are small shiny green to red to blackish, ± oval drupes - pointed below (as they hang downward).

We found this lovely bush blooming in Feb.1941. I remember seeing a great tree of this genus with just such blue blossoms in Baños.

P *42 - Buettneria ovata - STERCULIACEAE* - CACAO FAMILY

It may surprise even seasoned botanists that here is a member of the pantropical family containing the Cocoa and Kola trees; it is of a genus that has ventured into the cooler habitats of the Andes and thrives on the cancagua - volcanic ash clay - of the Quito-Pichincha environs as well as at lower elevations like Tingo (2500m). It forms thickets on slopes, in quebradas and eucalyptus woods, blooming and fruiting year-round. It is easy to spot by its up to 3-m-tall, erect, green, somewhat succulent, five-sided branches, armed with horizontally projecting thorns. Its straight-downward-pointing foliage give it a stark, almost wilting appearance. These 2-3cm-long ovate, alternate leaves 'droop' from short, ascending, pale-green, brown-stipuled leaf-stalks. They are dull-green, tooth-margined, with far-spaced, pale 'fish-bone' venations.

The small creamy to greenish, five-pointed star-flowers hang

singly or in small clusters from the leaf-axils. Each has a thin, short floral stalk that enlarges with the ripening, green-prickly fruit. Around the blossom's remarkable stamen arrangement, the five sepals are tinged soft-purplish-brown with creamy central stripe. The reproductive setup is complex and decorative with its five styles low in the center, the five purple, wavy stamens proceding from soft-greenish curving filaments - fused at the base, and bearing two horn-like staminodia(?) each, ± 1/3 up. These and the upper parts are somewhat hairy.(Possibly, this description includes rudimentary petals? For verification, a specialist is needed!)

The five one-seeded parts of the spiny capsule split open from the inside.

P *43 - Dodonaea viscosa - SAPINDACEAE* - FAMILY of Akee & Litchi

The open meadows of Barrio Floresta de Quito were a favorite habitat of this *Dodonaea* species. It is prominent because of its luminous, sap-green, broad-lance-shaped leaf masses, particularly during the six drought months; we found it blooming and fruiting from July-Oct.1941. Not being outstanding as an ornamental plant like other species of this genus, it is yet remarkable for its fanciful three-winged capsules and the bright-red-and-orange coloring of its stamens - no matter how tiny its flowers.

It forms low shrub-like stands with woody basal parts and slender branches. The leaves are closely arranged - ± alternate to whorled. Each has a pale central rib and delicate lateral

veins that interlock just below the smooth margin; they are paper-thin, shiny above, dull-shiny on the reverse side. When cut or broken, they exude a harsh odor.

The tiny flowers on thin, curving floral stalks form terminal clusters. The petal-less blossom has three - rarely also a fourth - scoop-shaped sepals that are fused at the base. They are soft-green with purplish mottles toward the rim; a few short hairs cover the outside. They open to a bowl-shape, enclosing the 7,8 or 9 fleshy, glossy-green, later red (outside)-yellow (inside) double anthers. These are the staminate flowers, while others are perfect, having the three-part shiny-yellow style from the superior ovary protruding out of the stamen circle.

The enlargements show a perfect flower on the left; a young staminate one in the center; and a mature staminate with its crisped, opened, purple-and-yellow anthers, to the right.

The fruit is a pendent, three-winged, pale-green structure, aprinkled and streaked with purplish-rose. A cross-section reveals three seeds ± each in its compartment.

This ±150-genera-family has ±2000 sps - mostly of the tropics and subtropics - 300 of which are lianas, and the remaining, shrubs and trees.

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Chapter 4 (S):

ILLUSTRATIONS

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Anthericum latifolium (Liliaceae)

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88 Boronda Road
Carmel Valley, Calif. 93924

(Liliaceae)
Anthericum latifolium



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Carmel Valley, Calif. 93924

(Baldaccii)
Sisyrinchium tinctorium HBK.?
201.



Govenia
~~Elleanthus~~ ? (Orchidaceae)

(C) MB
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MBP

(Continued)

Ellearthus ?



Pitcairnia pungens (Bromeliaceae)

Catharina Maria Barnas.

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Carmel Valley, Calif. 93924

Pitcairnia pungens (Bromeliaceae)



Solanum marginatum (Solanaceae)

6421-2
AZ

(Catharina Maria Barnas)
Mary Barnas Pomeroy
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Carmel Valley, Calif.

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Solanum marginatum.

Chapter 4 (S):

PLANT DESCRIPTIONS

DOUBLE-SIZED PLATES

S *1 - Anthericum latifolium - LILIACEAE* - LILY FAMILY

Of this large and well-loved family of at least 2000 species - not counting the *AMARYLLIDACEAE* which are sometimes included -, this modest yet impressive lily surprised us, blooming in Feb-March 1943: our 'private wilderness', sloping downward toward Guápulo, was its habitat. We expect that it still lights the springtime greenery with its silver-white star-blossoms.

Beginning underground - it starts from fleshy, sausage-like roots. Its leaves are basal, forming bunches of broad yet grass-like blades, centrally folded by a pale midrib; their base is white, and their margins are somewhat wavy; they are fresh-blue-green-silky, streaked with fine parallel veins. One plant has at least 20 leaves of up to ±4dm length, and may have more than one tall floral stalk. This shiny-rich-green stalk is round in the lower part with a leaf-like bract or two announcing the long floral arrangement in an-ever-more-closely-set whorled spike; this is ± angular to grooved.

In it, each bractlet holds 2-3 flowers in various stages of development, so that there is no telling when or where buds may burst into bloom. Each flower spreads above a thin, a bit more than 1cm-long pedicel of pale green. The three outer segments are more slender and tipped with yellow-green; the three inner lobes, broader, a bit crisped or pleated. All six are white. The superior green ovary has a white style with small capitate

stigma. Six threadlike white filaments become club-shaped where the yolk-yellow anthers open up.

S 2 - *Sisyrinchium tinctorium* - *IRIDACEAE* - IRIS FAMILY

With its 'yellow eyes' this Blue-eyed Grass proves that the common English name is incorrect in some cases. The majority has blue to purple blooms, but yellow and white flowering ones (P #3,first group,Ch.4) proudly take their stand. As far as the 'grass'part goes - though this species has extremely thin, long blades, it has no relationship to the *Gramineae* (Grass Family). It is an Iris-member.

A sure place to find it was beyond Campos Eliseos near the entrance of the hacienda with its picturesque pond at Mt.Pichincha's foot; likewise, lower down on a steep grassy slope edging the nearby quebrada. It flowered and fruited from Jan. to mid-March during the 1940s, year after year. Diels reports it from wet meadows at 3200m, Tipococha, Chimborazo.

Bunches of its 3 - 4.5 dm-tall elastic blades paraded in masses, showing their bluish-green cast and brown tips. Above their root-stocks, these slim leaves are yellowish to rosy-streaked, sheathing each other or a flowering stalk. The latter is equally thin, tough yet hollow, stiff, and up to five dm tall. At its tip, it bears the typical spathe of the Iris Family - in this case, green to purplish-crimson, containing 5-6 flowers that appear successively from their hiding-place.

Six broad yellow segments form the star-flower - three inner

narrower (petals), and three broader, outer (sepals) with more numerous fine nerves and occasional crenations. All six ± oval segments terminate in three fine points. Three yolk-yellow, longuish anthers sit on orange filaments that are fused to half-way up. The three styles of like coloring are also connected and reach out horizontally from between the stamens.

When the inferior green ovary begins to develop, the thin pedicels project slightly above the drying spathe. At last, each long, bumpy capsule reaches ± 1.08 cm and splits at its top into three lobes, freeing the globe-like, black seeds.

This plant's specific name derives from the reddish, oily tincture released by the roots when placed in water.

S *3 - Govenia sp. - ORCHIDACEAE* - ORCHID FAMILY

Feb-March 1943 offered this rather impressive orchid on the grassy slope from Floresta to Guápulo. The plants preferred growing near eucalyptus trees where they stood at least 3 dm tall - or considerably taller. Commonly two or more large, parallel-pleated leaves along with one erect floral stem proceed from a bulb that is often half-way above ground. A number of papery sheaths surround and pack these features bundle-fashion.

The leaves ascend, showing their dull, bluish-green outside with reddish-purple striations. They have yellowish-green insides - silky, due to the texture of tiny bladder-like cells. The leaf-margins and slender tips are crisped to wavy.

A shiny-dark-purplish, sectioned by sheaths, is typical for

the floral stem. Its long terminal spike of whorled flowers in pointed, papery bracts, is generally surmounted by those basal leaves.

The flower's stout, grooved, shiny-purple-maroon stalk containing the inferior ovary is at first 1 1/2 - 2 1/2 cm long and straight, holding the grayish-pink to creamy petals that are horizontally-streaked with brilliant-lavender-rose speckles; the two lower are ± sickle-shaped, the three larger ones connive over what looks like a tiny yellowish duck - the 'column' -; the small 'lip', decorated with dots along the inner rim, becomes raised after pollination.

Then the capsule begins to swell, lengthening to ± 4cm, maturing an immense number of tiny seeds - as do all orchids. These primitive seeds depend on the presence of a fungus for their germination in the ground - a special symbiotic relationship. It is a very slow process.

S *4 - Pitcairnia pungens - BROMELIACEAE* - PINEAPPLE FAMILY

This gorgeous Bromeliad grew in masses on the steep walls of quebradas or hillsides around Quito, above Guápulo, and in Baños. This shows adaptation to a range of altitudes. It is a species that has become terrestrial and drought-resistant - typical of the genus *Pitcairnia* - unlike the majority of bromeliads growing as epiphytes on host-trees in tropical or sub-tropical jungles or mountain brush. Full bloom was in Jan.(1945).

The sturdy root-system, protected by brown, sharp-tipped

bracts and tall, branching spines at ground-level, produces a rosette of deep-green, broad-blade leaves - their outsides (backs) partially dusted with white-felty flakes. Each leaf's central fold looks on the inside (top) groove-like; on the outside (reverse) like a prominent mid-rib. Fine parallel veins streak the blade's silky surface - its margins being somewhat wavy but entire.

The often close to 30 cm-tall, round floral stalk originates inside the leaf-package. Numerous whorled, lance-shaped, greenish bracts trim that stalk with pale-fuzzy, fibrous particles - much like those on the leaves; it is from greenish-brown to dark-purplish. The terminal spike is often gracefully curved to allow each flower its proper exposure to light and pollinators, particularly hummingbirds. Each ± 5cm-long blossom in turn, curves out from its subtending bractlet. The inflorescence has many such in whorled arrangement. They are draped with the felty substance, and in spreading, they contrast with the bracts below, which are smooth-green, ascending parallel to the stalk.

Each flower's three pointed, outer segments are ± half the length of the three inner, slender ones (petals) ending in somewhat wavy or small-lobed tops like tongues. All six are bright-red, while the six filaments are silky-lemon-yellow, protruding with their 1cm-long, yolk-yellow anthers, along with the likewise yellow style tipped with a twisted stigma. The superior ovary has three fused carpels. Each corolla sits on a short, white-fuzzy pedicel.

A good comparison for each flowering cluster would be a

'miniature red-flaming fire'.

S 5 - *Solanum marginatum* - guapag - *SOLANACEAE* - NIGHTSHADE or POTATO FAMILY

South-America with its great concentration of Nightshades may well be the birthplace of that family. Its genus *Solanum* with ± 1700 species almost worldwide in distribution, is here represented by a remarkable shrub supposedly native of Africa. It is described by P.Munz and H.Rickett as having yellow, 1 1/2 cm - thick berries; in Quito's environs, however, the shrub by that same name and features, bears fruits the size of average to large tomatoes. These may be found year-round, while the blooming-season begins in Sept.

The almost tree-like trunk is woody, cork-brown, and the branches are round, thick, greenish-white-felty or wooly, armed with scattered wicked, yellow to reddish-brown spines; the latter are likewise pale-felty up to ± the middle.

The gorgeous large, broad leaves on short, stout, felty-white stalks are shallowly-lobed yet so wavy that they impress one like oak-leaves. They are shiny-blue-green above with the exception of the margins; these have the grayish-felty finish as does also the reverse side. The intimidating spines proceed from the pale rib-structure - straight-up from the upper, straight-down from the lower, surfaces. Yet Ecuadorean burros don't hisitate to eat the whole works.

The floral clusters are produced on stump-like, spiny stalks independent of leaf-axils. Rarely more than six fairly slender,

pale-wooly stalks branch away - each with one bud or flower. The full-blown blossom is a five-pointed, yet broad-lobed silken-white corolla - crinkly in between the five purple middle-nerves of the petals. This creates a precious star-design. But mostly, the flower hangs down like a lampshade, flashing its spine-studded felty calyx instead of its five closely-set yellow stamens. These hide the white style and green stigma.

The tomato-size fruit is poisonous, but is being used by native Ecuadoreans for making soapy lather for washing their clothes in the cold river waters. Shiny soft-bluish-green marbled with darker-green is typical for the younger fruit; rich dirty-yellow, also with highlight, for the ripe and ready. The floral stalk (peduncle) has grown thick and strong to hold so solid a fruit.

Chapter 5:

GLIMPSES OF ECUADOR'S FUNGI

Chapter 5

G L I M P S E S O F E C U A D O R 'S F U N G I

This my artistic-botanical account would be incomplete - at least for me - without this chapter on the magical 'Third Kingdom', as it is sometimes called. That mushrooms, (toadstools or fungi also as interchangeable terms), d i d grow in the New World, I had no doubt because these surprising organisms are indispensible to Earth's healthy functioning. But during those six long summer months of drought, this was hard to conceive of. So - when at last the rainy season started to shower regular rains upon the landscape, I was excited, ready to pull on my rain boots, take the dog for a walk and go mushroom hunting. My reason for doing so had nothing to do with a wish for edible species, only to discover and admire any of them - in their freshly sprouted perfection, in their chosen habitat.

Knowing that now tiny spores could come to life in the dark wet soil, sending out their white threads named hyphae to form the main fungus plant, the mycelium, made me feel expectant. That already existing mycelia could return to renewed action, made me stop and search under greening vegetation or fallen eucalyptus leaves. It took some weeks of just enjoying the cool moist atmosphere with the long rows of young eucalyptus trees reflecting in many puddles in Quito's meadows which had been the

color of straw for so long. Mt.Pichincha stood in a delicately pinkish and green checkerboard skirt now, its highest crags wearing a brilliant snow cap.

At last, patience was rewarded: what looked to me like meadow mushrooms appeared. Each day, more popped up, eventually forming 'fairy rings' - this appealing phenomenon produced by the radiating hyphea in the soil with the new fruiting bodies (the mushrooms) arising at the circumference.

Many wonderful mushroom guides tell expertly about the ways of fungi. This brief chapter is meant to merely show a few representatives of this enormous no-chlorophyll,'Flowerless Plant Kingdom' which has no doubt a quantity of species comparable to that of the Green Plants. These numbers continue to multiply as mankind discovers more species. This is a drawn-out process because of the secret lifestyle of most fungi.

The enthusiasm accompanying such discoveries is the best part, really. It is the wonder we feel at finding a treasue. No matter how many other people have found the same one, it is t h e i r very own! This is how I delighted in all the small brown, tan or white toadstools I spotted as the wet season progressed. Often, Father was with me on my 'hunts'. The moment something promising caught our eye, we rushed toward it and tried to place it, naming it if we could. After the usual drab-colored little guys, we spotted lovely glassy-yellow, cup-to-shell-shaped fungi at the base of eucalyptus trees. We were sure they belonged to the Ascomycetes. And then, what joy to come upon groups of rusty-orange mushrooms with pink gills! They were in the

Basidiomycetes, we knew. Other more colorful clients appeared...

As for eating mushroms from the field, I have always shied away from it. Although in my original German homeland I have tasted the delicious flavors of wild boletes, chanterelles, and meadow-mushrooms, I prefer to just see them in their natural surroundings, undisturbed. There is magic in their sudden appearance when there was nothing the day before; mystery in their fine, often undefinable aromas; beauty in their artistic placement among small plants, grasses or mosses, or on tree trunks.

Later, on our jaunts into the Western and Eastern jungles, down from the high country between the Andean Chains (cordilleras), we met with to us fascinating new forms of the mushroom world. Even there, in spite of generous rainfalls, the majority of our finds were small of stature. We reasoned that possibly the mycelia alone, or in symbiosis with trees and other plant roots, can accomplish enough needed decay among the layers of fallen leaves to n o t necessitate a great many fruiting bodies (the mushrooms) with their spores. It is a known fact that only during perfect conditions - plenty of water but not excessive, along with the right temperature for their complete life cycle - innumerable mushroom species may then appear, often in very large numbers. Perhaps less ideal seasons or years were upon us? The ephemeral nature of some fungi,too, may have fooled us into believing in their absence; they might well have come and gone - say within a matter of hours? Rarely did we stay in one location long enough to continue to check up on 'fungus matters'.

Besides, how difficult it is to return to an exact spot when the forest interiors in general look so much alike! We certainly d i d have our limitations.

Refering back to the small size of the fungi depicted, it is the main reason why I chose to paint them in miniature format. My inspiration was a colorful mushroom album a friend in Holland had given me. She, too, was 'bitten by the bug'. We had roamed with Father through the German forests where mushrooms in all colors and sizes abounded. I proceded with that ideal - showing the toadstools in their typical settings. To me they look so much more alive in moss, decaying leaves, or growing on little pieces of wood, rather then picked and placed against a white background. The contrasting colors set off my models, sutaining their vitality as my small pictures. And watercolor was and is the ideal medium for this subject matter - delicate, often transparent, somewhat unpredictable. Yet each species or group made a typical miniature composition, straight from Nature.

The extent of our identifying the visible fleshy mushroom world was at that time confined mainly to the two major classes - the Ascomycetes and the Basidiomycetes. The varied fruiting bodies of the former bear their zillions of spores contained in asci or sacs on the surface of the often cup-shaped fungus. The much loved morels belong in this group.

The Basidiomycetes, we could easily tell by the many umbrella-shaped toadstools with or without annulus or ring around their stems; many having gills underneath their caps, others a spongy mass with tiny pores where the spores are formed on innumerable

club-like structures called basidia. Even puffballs, earth-stars and coral fungi are of this type.

Our impression was that in the tropics perhaps the former class, the Ascomycetes, are far more common than the Basidiomycetes. I am not enough of a scientist to know why. Could it be because of the greater durabililty of the Ascomycetes' rubbery make-up? It is fun to speculate. Doubtless, studies are right now under way that will reveal such numerical facts, as well as the reason for these and other claims. Considering edibility - mostly of the 'higher' fungi - I know of only one account where the Jumbo Indians of Tena, Oriente, used to collect snow-white shelving mushrooms growing on decaying tree trunks, because of their delicious flavor. I never found out whether they were gill or pore fungi, but they were of a good size. My sister Dora who had lived with the same family before we went on our painting trip there, told us about it. These mushrooms were called 'alas' or 'wings'.

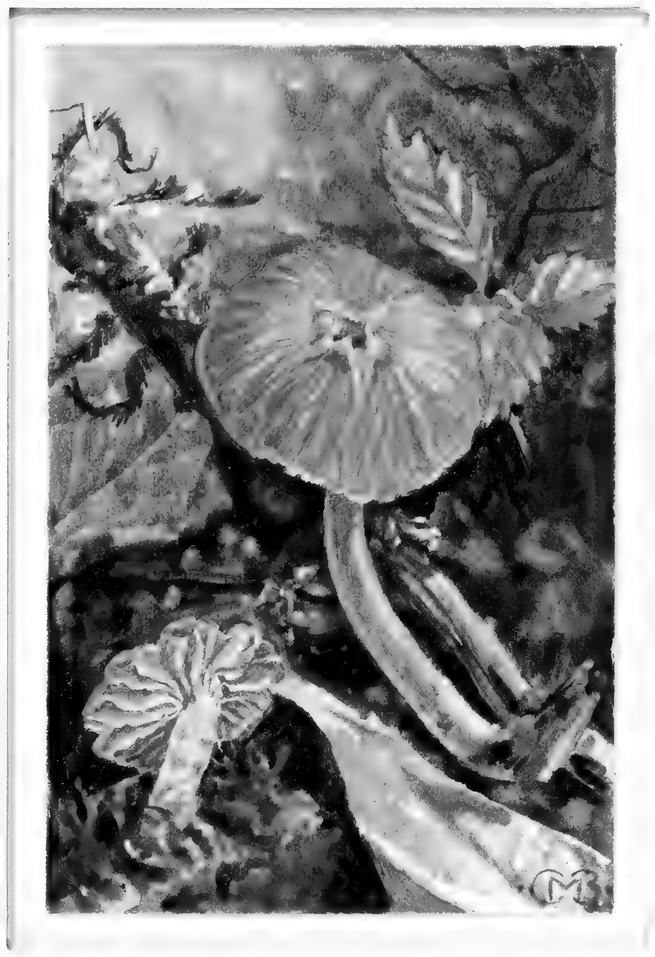
With the help of many fine mushroom books and that given me by well-known mycologists, the species were identified as closely as possible without having had the needed microscopic details. May the fascination I experienced when finding and portraying these exquisite tiny organisms become tangible to viewers of their images! My fondness of Nature's infinite wonders is here expressed. If each human being learns to respect Nature, there will be no more loss of her species and the ecosystems composed of them.

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PLATE VII:	**TWO FORMS OF BASIDIOMYCETES (GILL & JELLY) FROM THE TROPICS – 26,27; ASCOMYCETES FROM QUITO & JUNGLES – 28,29,30,31**	
26	*Hygrocybe paraibensis* (Sing) or *H.siparia* (Sing) – (natural size)	14
27	*Sirobasidium sanguineum* – Rosy-red Jelly-Fungus (natural size)	14-15
28	*Xylaria sp.* – conidial state (natural size)	15
29	*Guepiniopsis buccina* – Gold Eucalyptus Cup (natural size)	15
30	*Cookeina tricholoma* – Rose Elf Cup (natural size)	15-16
31	*Scutellinia sp.* – Little Fire-Dish (natural size)	16-17



1



2



3



4

Plate I

Basidiomycetes from Ecuador's semitropical jungles.

- Natural size -

- Hygrocybe firma(?)
- Leucocoprinus Birnbaumii
- Marasmius sp.
- Marasmius laematicylatis

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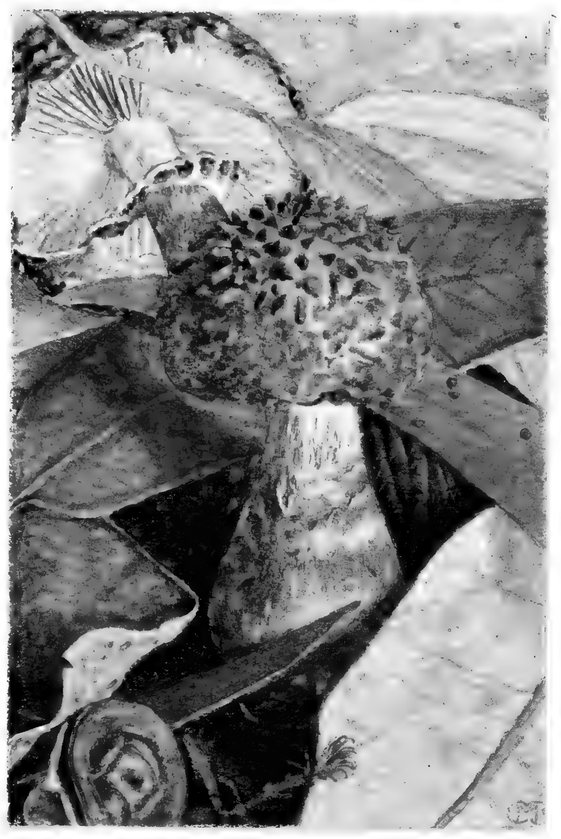
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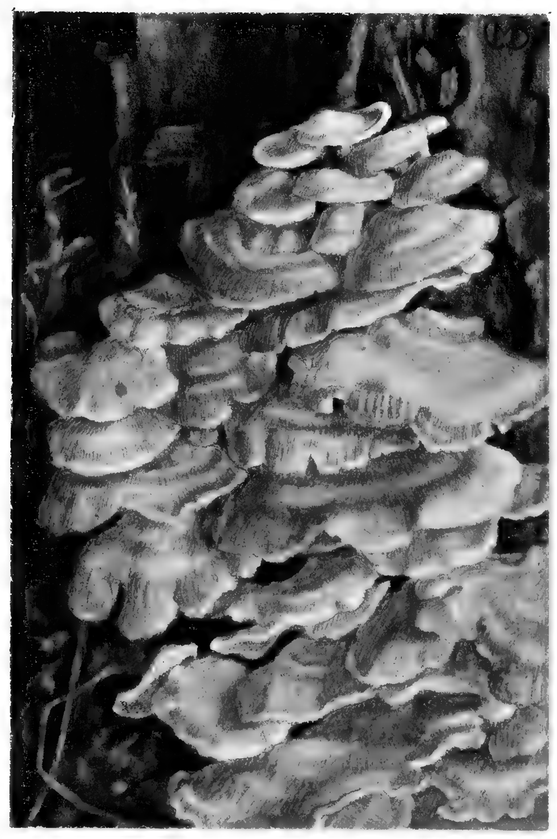
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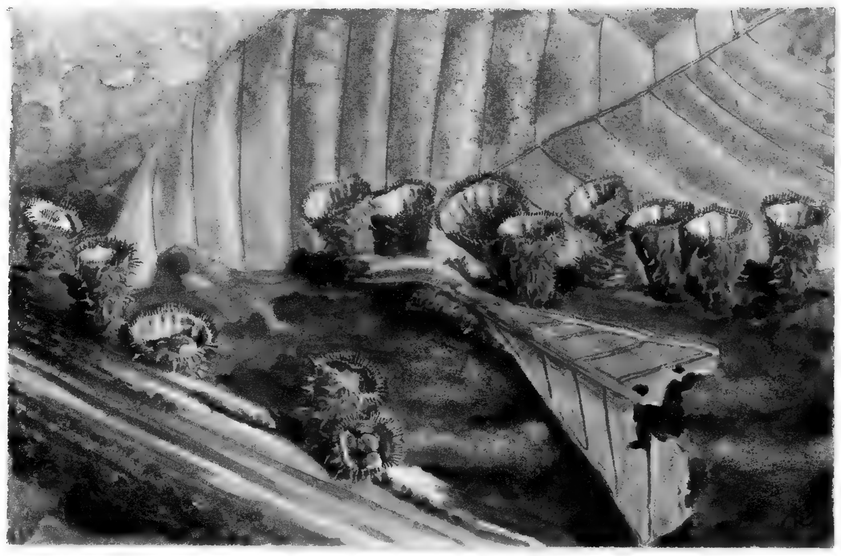
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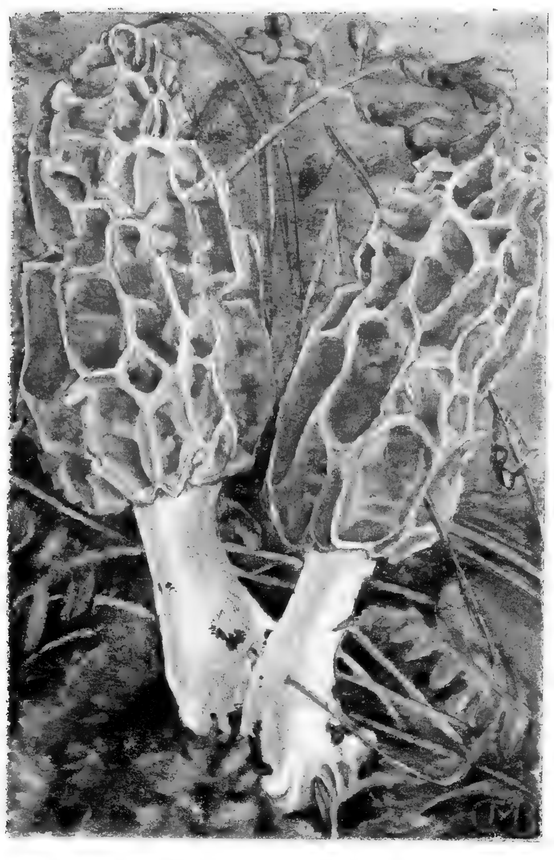
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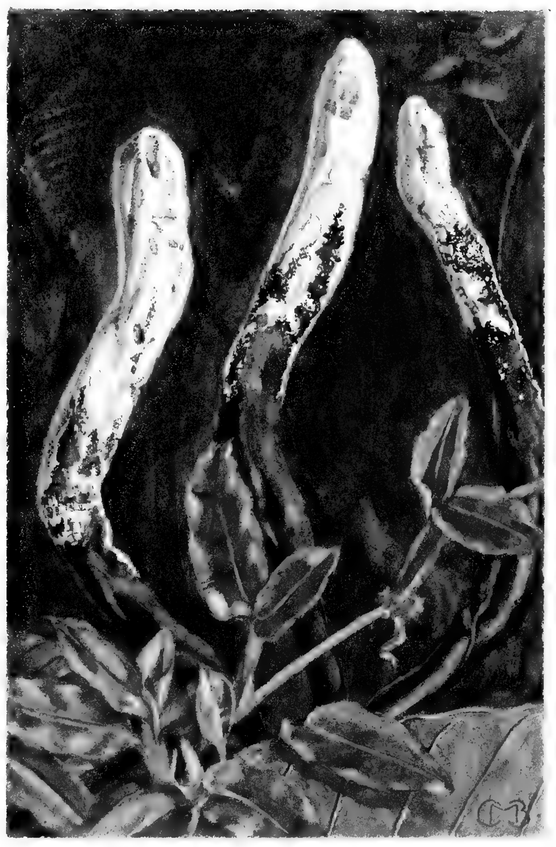
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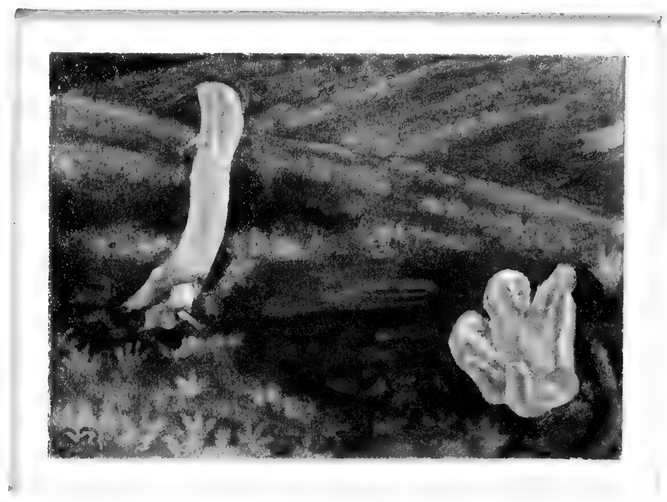
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28



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30



31

Plate VII

2 Basidiomycetes (top), and 4 Ascomycetes from Ecuador.
The two species in the middle are from Quito with its
temperate climate. - natural size -

• Hygrocybe paraibensis (Sing) or Singeria (Sing)

• Sirobasidium sanguineum Lag. ex Pat.

• Xylaria sp. - Conidial state

• Guepiniopsis Buccina (Pers. ex Fr.) Kennedy

• Cookeina trichocoma (Mont) O. Kuntze

• Scutellinia cubellata

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Chapter 5:

FUNGI DESCRIPTIONS

EXPLANATARY NOTES:

In this case of the fungi, measurements have been used because the illustrations are not necessarily shown at the mushrooms' actual size, but to accomodate the miniature picture size!

(All the flower images, however, are drawn at life size).

The common names here given are my personal coinage and should not be taken too seriously; they merely aid in pinpointing each species' visible form - the fruiting body (mushroom).

Like the flowers, they are arranged so as to create a pleasing, balanced composition of each plate - colorwise as well as similarity-wise, but not in strict scientific order.

Main Mycological Descriptive Terms Here Used:

PILEUS: cap of mushroom

STIPE: stem of mushroom

GILLS: concentric vertical plates holding spores in Basidiomycetes.

PORES: fleshy layer of vertical tubes holding spores in Basidiomycetes.

ANNULUS: ring around stem.

SPORES: the minute 'seeds' of fungi, borne in various 'packagings':

First Class - ASCOMYCETES: Sac Fungi - spores are produced in sac-like structures called *asci*: cup, sponge & saddle fungi; (also yeasts, molds, etc.)

Second Class - BASIDIOMYCETES: Club Fungi - spores borne on often club-shaped structures called *basidia*: jelly, coral, puffball, tube(pore), 'teeth' & gilled fungi.

PLATE I : BASIDIOMYCETES FROM (SEMI)TROPICAL JUNGLES - 1,2,3,4

1 - *Hygrocybe* (probably) *firma* - Fiery Hygrocybe (natural size)

Pileus - 2-3cm across, inverted-bowl-shaped to spread-out, very thin and brittle, practically without fleshy layer; bright-fiery-orange with striations of blood-red. Top sometimes torn star-fashion, thus revealing the hollow stem. Silky sheen.

Gills - rather thick waxy; far apart, usually one entire gill alternating with one short one ± 1/2 or 1/3 its length; yellow, decurrent with tooth. Spores - white.

Stipe - hollow, round, of hornlike sheen; white at base, then pale-lemon-yellow, reddish-yellow nearer gills.

Archidona, Oriente - Hcda.Ruediger, near River Misahuallí, in the dark jungle. Singly or a few scattered specimens. March 1943.

2 - *Leucocoprinus birnbaumii? Lepiota?* - Lemon Parasol - (Natural size)

Pileus - 1-2cm high, very pale-greenish-yellow, ± long-egg-shaped to campanulate, with central flat lemon-yellow button that is glossy when moist. Young specimens have a slightly flaky cap, older ones have tannish scales, especially around the central button that also turns brownish. Cap cracks easily when opening.

Flesh - paper-thin. Gills - greenish-yellow, fairly crowded, free. Spores - white.

Stipe - light-greenish-yellow, first flaky, later smooth with a few scales and annulus; solid; enlarged at base.

Entire mushroom - 5-6cm tall.

Archidona, Hcda. Ruediger; edge of rainforest, at foot of young tree. Found only once - small group. Jan.1940.

3 - Marasmius sp. - Bouquet Mushroom (3/4 natural size)

Pileus - thin-fleshy, yellowish-creamy-white-tannish, mostly spread-out, but irregularly-wavy, usually with central bump or small button or dip. Up to 2.5 cm.

Entire bunch 12-13cm tall; extremely crowded with wavy stipes to accomodate flat caps at all levels - from close to ground to apex. A mushroom-bouquet!

Stipes - wire-thin, tough, hornlike, hollow; russet-brown, often twisted and fused at base. Indeed a surprising wobbly bundle to encounter among large decaying jungle leaves on humus. The 'posy'nature is punctuated by its strong, flower-like scent.

Gills - yellowish-white.

Saloya, Occidente, 1700-1800m. Sept.1938.

4 - Marasmius haematicylatis - Carmine Elf Umbrella (nat.size)

Pileus - 5-13 mm across, shaped like umbrella with rather flat top. Its 9-10 deep folds run from central dip to periphery in

broad, rounded 'umbrella sections'. Edge wavy, slightly in-turned. Outside velvety deep-carmine (rose-red). Paper-thin.

Gills - 1 mm high, lightly serrate, pinkish-white; the broad areas between them darker pink. All 9 or 10 gills reaching from stem to rim; paper-thin.

Stipes - 3-5 cm tall, hair-thin, brown, tough, of horn-like sheen. - Entire toadstool very fragile. A tiny miracle!

Gregarious, it grows entirely loose from ground on leaves and sticks, aiding their decay into rich humus of dark huge jungle.

Archidona, Oriente - Hcda.Ruediger. Jan.1940.

PLATE II : BASIDIOMYCETES FROM QUITO - 5,6,7,8

5 - Panaeolus papilionaceus or *finipectris* - Leather-Spotgill

(natural size)

Pileus - dome-shaped, campanulate, rarely spread-out, and then deeply torn; yellow, ochre or pinkish; glossy when moist; leathery-shriveled when dry. 1-3 cm, smooth and thin.

Gills - greenish or reddish-gray with black spots, and white edge; rather far apart. Spores - black.

Stipe - very slender; whitish to yellow, lighter above; finally powdered with black spores. It may have remains of a thin annulus or none.

Common around Quito, in manure-rich pastures or eucalyptus woods. Usually gregarious. Oct-May 1938-'39.

6 - Psilocybe coprophila or *subcoprophila* - Brown Spotgill (Natural size)

(6)Pileus - 5-12 mm across, campanulate to inverted-bowl-shaped. Burnt-sienna-brown, later yellowish to grayish-brown; glossy with finely-striate margin, finished with pale, frilly edge, sometimes with fine gray flakes.

Gills - gray-spotty with light edge; broadly-attached, rather wide apart, irregular lengths. Spores - black.

Stipe - 2-3 cm tall, slender, tough, pale tan or reddish with lighter lengthwise flakes. Thin-fleshy; slightly enlarged at base. - Gregarious, on manure or rich soil, Quito, Oct-May.

7 - Crinipellis probably *megalospora Sing.*- Fuzzytop (nat.size)

Pileus - not exceeding 1cm across. First rounded, then spread-out flat. Creamy to tan with brown central button. Edge frilly, slightly raised. Finely striate, shiny when wet, papery-fuzzy when dry.

Gills - whitish, nicely rounded, irregular in length; free, fairly close together. Spores - white.

Stipe - 1-3 cm tall, tough, hollow, 1mm wide, dark-red-brown.

Quito, between grass, on decaying straws or other debris, singly or in small groups.

8 - Laccaria ohiensis Sing. - Rusty Laccaria (natural size)

Pileus - normally to 2cm broad, but larger during abundant rains; then they grow irregular and torn at the margin. Russet-

red, slighty striate, the center darker, sometimes with shallow dip. Gills - soft-pink to tannish-pink, of varying length, rather thick, nearly free, sometimes attached with tiny tooth. Edges crenulate. Spores - white.

Stipe - fairly slender, wider at base, often flattened because of close clustering. Hollow, russet-red with hornlike sheen.

Grows always under eucalyptus trees, on rotting leaves or sticks. Appears to be the most common toadstool around Quito. March - May; Oct.1938,'39,'40.

PLATE III : INKY CAPS (BASIDIOMYCETES FROM QUITO) - 9,10,11

9 - Coprinus sp. - Slender Inky Cap (natural size)

10-17 cm tall, extremely fragile.

Pileus - nearly transparent, gray, striate (from the gills underneath); top a tannish button which soon becomes flat as edge of cap rolls upward turning into black spore-mass ('ink'!)

Stipe - 2.5 - 6 mm across; translucent white.

Grows on horse manure, gregarius or singly. Quito.

10 - Coprinus sp.- Golden Inky Cap (slightly reduced)

Pileus - to 5 cm broad, ochre-yellow, from globose, egg-shaped to campanulate and spread-out, finally with curled-up black margin. Center russet-brown with large tan disk; light-tannish flakes remaining all over its close, longitudinal 'pleats'. Flesh

very thin. Gills - at first white, then black with spore mass.

Stipe - white, hollow, evenly-slim but for slightly enlarged base; to 6 cm tall; no annulus.

This little gem grew in ever-moist spot in our barn; also along slopes and roadsides near Quito. Always in dense clusters - so close that even the pinhead-sized immature ones formed a brownish layer! - April, May, June.

11 - Coprinus sp. - Little Bluebell (natural size)

Pileus - 1-2cm across, equally tall, acutely bell-shaped or conic; soft-blue-gray; delicate, nearly transparent; striate, set with fine white bloom. Edge appears serrate because of wreath of fine white remains. Apex dirty-yellowish-white; first moist, later dry and crackled.

Gills - first light, then gray with white edge; translucent; attached. Spores - black.

Stipe - 2.5 - 4 cm tall, slender, silky-white with white bloom; near base often with black fibers.

Quito, at base of small post, not on it, in shady, moist spot. Small cluster.

PLATE IV ; BASIDIOMYCETES FROM QUITO AND JUNGLE - 12,13,14,15

12 - Lepiota hispida - (slightly reduced)

Pileus - globose to spread-out, grayish-brown, covered with brown

angular warts - sometimes washed away by rain. 3-5cm across. Flesh and spores cream-white. Gills - creamy-white, closely-set. Stipe - creamy-white, felt-like to flaky; bulbous toward base, silky-buff; inconspicuous concentric layers where buff turns to white. Annulus - brownish-flecked on bottom side.

Entire mushroom 6-8cm high.

Quito, near golf course. Singly or few in group; at foot of eucalyptus trees. From early March to May 1938,'39,'41.

13 - Hygrocybe conica (natural size)

Pileus - 1-5cm across, yellow to orange-red,its margin extra-fiery. Young ones red all over; later greenish-yellow to black; finely-striate with silky sheen. Margin often wavy or torn.

Gills - waxy; lemon-yellow or pale, later with grayish edge. Amost free from stipe.

Stipe - to 5cm tall, rather sturdy (1cm across); yellow to orange, striate, sometimes flattened or twisted; hollow, juicy.

Spores - white.

Quito, in open meadow near large garden above Guápulo. Gregarious. May'42;late Feb'43. - Dr.R.Singer collected this species also at Cotopaxi.

14 - Ganoderma sp. (slightly reduced)

This pore fungus is 4-6cm across, appearing from fallen logs on stump-like stipe ~~in~~ on the side of its ± fan-shaped to near-

circular fruiting-body. When it grows on top-surface of log, its stipe is ± centered.

The entire fungus is bright-orange-red, showing concentric bands, especially towards outer edge where it is lighter.

Flesh layer ± 1mm thick and very tough. Underneath surface is even more brilliant-orange, having the tiniest pin-prick pores.

Spores - grayish-white.

One of the most common fungi around Archidona where it trimmed almost every rotting tree trunk, post, bridge or fence; we never found it on living wood. Not so common in Tena and Napo. Feb'40.

15 - (Polyporus) Favolus sp.- Leather Shell Fungus (natural size)

Pileus - resembles the valve of a seashell when the short ± lateral stipe does not show; it measures 1-4cm across; grows in close clusters like overlapping shingles on a roof. Thin-fleshy. Upper surface lavenderish-tan with slightly curled-in margin - especially in young specimens.

Pores forming network of elongate, angular shapes, radiating from stipe almost like gills with connecting walls. This spore-producing down-face is white.

It grows on decaying eucalyptus wood and is distinguished by its very pleasant fragrance. Quito, March, May 1939.

PLATE V : BASIDIOMYCETES FROM QUITO & JUNGLES - 16,17,18,19,20,21

16 - Collybia (probably) *syringea Sing.*- Cerulean Collybia (Natural size)

(16) Pileus - 1-2cm across; inverted-bowl-shaped to spread-out; in latter case, margin often torn. Striate pale-cerulean-blue; white star-or-flower-like center with pronounced glassy-pale-greenish nipple which may show white bloom. Cap's margin white, often with tiny indents.

Gills - narrow, close, wavy, irregular in length; almost free, usually attached with small tooth; delicate green-blue, almost white. Spores - white.

Stipe - to 2cm tall; white, hollow, slender, round, evenly-wide; base with wreath of fine white mycelium threads.

Growing in groups (not quite clusters) on decaying wood or the jungle humus. Archidona, Oriente; Hcda.Ruediger; through March 1943, rather common.

17 - Marasmiellus sp. (natural size)

Pileus - 0.8 - 2 cm across; pot-shaped to spread-out flat, however wavy and torn at margin. Creamy to tan with russet-brownish areas. Bluish-gray when drying up. Broadly-striate, sometimes a bit lopsided. Paper-thin.

Gills - creamy to grayish, very far apart, irregular in length and often branched. Papery; rather broadly attached. Spores - white. Stipe - never more than 2cm tall; wire-thin, sometimes twisted; tough, hollow, brown-gray to blackish-brown.

Quito, on level, grassy spots. Gregarious. Feb-April, also Nov.1941-'42.

18 - Cyathus olla - Bird's Nest Fungus (natural size)

This pretty 'nest full of eggs' is only 1cm high and up to 1cm across; dull creamy or tannish-gray outside; shiny lavender-gray inside. Its margin is often rolled outward, with darker rim.

It holds tan to yellowish disk-like spore-packs, attached to each other by fine threads. Dispersed by rain and wind.

Gregarious, it grows on sticks or on the ground. In fields among weeds near eucalytus woods. Quito.

19 - Cyathus striatus - Russet-brown Bird's Nest (natural size)

1cm high, 8-9mm wide (top). This delicate nest fungus forms a perfect funnel; burnt-sienna-brown, hairy on outside; lavender-gray to tannish and shiny inside, somewhat pleated near margin trimmed with border of stiff, erect, brown hairs.

Young specimens closed by membranous lid with central tuft of hairs. Base of funnel on dark-red foothold, on decaying sticks. Spore-packs dark lead-gray disks which the elements will scatter.

Archidona, Oriente, in dark jungle near Misahuallí River.

20 - probably the sterile remains of some *GASTEROMYCETE* - I will call it 'Orange-brown Mystery' (natural size)

Rubbery, russet-brown-glossy, irregularly-shaped fruiting-body with inward-rolled or backward-bent margin; ± dish- or half-dish-shaped bright-orange central part that may be wrinkled or

sculped flower-fashion where it opens from its short, tough stipe. To 6cm broad. On the ground, a rather dry spot, in a quebrada near Hcda.'Las Monjas'. Jan.1938. (Although it is incomplete, I couldn't resist its artistic appeal).

21 - Scleroderma citrinum (aurantium) - Marble Puffball (natural size)

Seems not to exceed the size of a marble. At first, white with fine warts, fleshy inside. Then turning goldy; dark-brown and paper-thin at maturity, letting the olive-brown spores escape from central opening.

Common around Quito, particularly along steep slopes; gregarious. March-April, even later, until summer drought starts. 1938-'39.

PLATE VI : ASCOMYCETES FROM JUNGLES - 22,23,24,25

22 - Morchella esculenta - Morel (slightly reduced)

Pileus - elongate, narrower towards apex; light-ochre-colored with coarse reticulation of mainly vertical design. Hollow inside along with stipe. The outer 'honeycomb'- hollows bear the white spores, the ridges being sterile.

Stipe - fleshy, cream-white, rather smooth and slim, hollow. The entire fruiting-body 9-10cm tall.

Quito, among ferns and flowers near golf-course, under eucalyptus trees - just once, and it was March (1938).(In

California , this delectable mushroom prefers May,June. Here in our garden, several grew near fruit trees, years in succession, even in fairy-ring, and one in a tall strawberry-jar).

23 - Xylaria probably *grammica* - Witches' Fingers - conidial state (slightly reduced)

The dull-black stipes come from deep in the ground, are tightly fused and anchored; tough as cable, ending as slender, elongate, tannish 'fingers', textured with black vertical cracks, pinpricks and other irregularities. Their 'fingertips' are white.

The entire fungus is 8-10 cm tall; almost woody; its inside white. - Archidona,Oriente, near Hcda.Ruediger (house) in dark spot under shrubs and trees, among decaying leaves. Jan.1940.

24 - Xylaria sp. (conidial state) - Devils' Tongues (reduced)

Fruiting-bodies 9-11cm tall, resembling weird tongues or clubs; satiny-black, irregularly contorted or bent, their upper parts (± half their full length) rounded or flattened, blunt and white-powdered. This powder - spore dust - disperses at lightest touch. Flesh pinkish-yellowish-white; soft, yet tough and juicy.

Dos Ríos, Oriente; on rotting stump, deeply hidden among large wet jungle leaves and what looks like Bermuda grass. Gregarious.

25 - Xylaria papyrifera - (also known as *X.allantodea*) - Sausage Fungus (natural size)

Stipe - ±2cm tall; quite short in contrast with the sausage-

like fruiting part of this strange organism (5-6cm); dark-blackish-brown, velvety because of roughish surface texture; shiny when wet. Flesh yellowish-white, hard but juicy, smelling of raw pealed potatoes. A long-section reveals the 'sausage's central band to have a number of hollows that are increasingly larger towards the apex. All along the outside, underneath the black surface, a row of tiny, shiny, green discs is neatly arranged - the spore packs. - Dos Ríos, Oriente, on side of mossy trunk, singly, in dark jungle. Common in the tropics.

PLATE VII : 2 FORMS OF BASIDIOMYCETES (GILL & JELLY) FROM THE TROPICS - 26,27; ASCOMYCETES FROM QUITO & JUNGLES - 28,29,30,31

26 - Hygrocybe paraibensis (Sing) or *H.siparia* (Sing)-(nat.size)

Pileus - 3-8mm across; rich blood-red, a bit darker in center; slightly roughish, yet glossy; convex with thin, lemon-yellow, frilly margin. - Gills - thick, far apart; not all reaching stipe; broadly attached or decurrent with tiny tooth; yellowish-white on bluish-pink. - Spores - white.

Stipe - to 3cm high; blood-red to brown-red, smooth, shiny, juicy, hollow; thinner above: 1mm.

Saloya, Occidente; in dark jungle settings, or on mossy slopes; gregarious. 1450-1900m; Aug.1940.

27 - Sirobasidium sanguineum - Rosy-red Jelly-Fungus (nat.size)

(27) - Usually 1-2cm high, but sometimes growing much larger, forming weird transparent lobes; regardless of the general shape this jelly fungus takes, its rounded-off extremities are typical. Most beautiful in early stage - the lovely light-red of these almost translucent organisms against the rich jungle green.

Saloya, Occidente, at ± 1700m; on mossy logs in many parts of the forest, mostly near river. Seems to be common. April 1940: specimens on same log as two years before; also very numerous all over the jungle. April 1941: less numerous.

28 - Xylaria sp. - conidial state (natural size)

Base of fungus black; antler-like white branchlets with salmon-colored tips. Grows in clusters on wood in the ground - rather fresh wood it seemed, there in a mossy roadside.

This coral-like fungus has a delicate perfume. Quito,Dec.1938

29 - Guepiniopsis buccina - Gold Eucalyptus Cup (natural size)

From orange-red stipe opens orange-yellow cup, bending forward like lampshade. Gellatinous-glossy when wet; outside of cup slightly streaked with tiny folds when dry. Up to 2cm high, 1cm of which pertains to stipe.

In clusters on eucalyptus stumps and at the very base of apparently living trees. Quito, early June.

30 - Cookeina tricholoma - Rose Elf Cup (natural size)

(30) This lovely rose-colored cup fungus has a short, slender, white stipe. Outside of 'bowl' pale-pink with row of whitish fibers around its rim. Several 'wreaths' surround that, but hair, if any, is rudimental on them.

Inside almost the pink of a Picture Rose, especially the central even richer-colored disk in its botttom; dull, smooth, nearly translucent. To 2cm across.

Archidona, Oriente: singly or few spotted around on mossy logs in semi-dark jungle settings; Jan.1940.

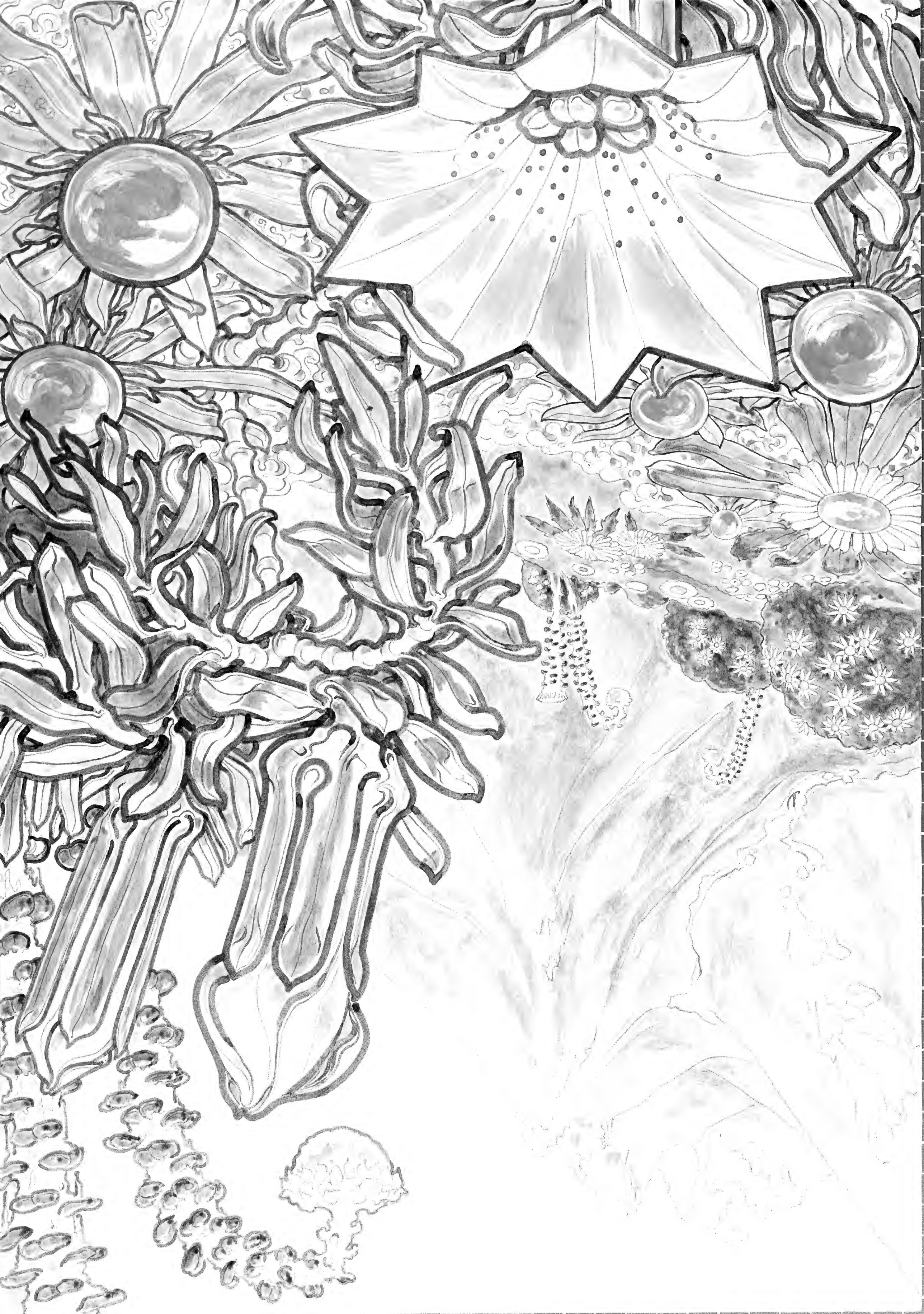
Rather frequently, I found another similar species, in the rainforest of Dos Ríos, Oriente, in Feb'40, mostly on decaying wood. Its 'bowl' is only 1 - 1.5 cm broad, soft-pink or salmon to yellowish-pink, both inside and outside; more transparent and without rich-pink disk in center. Its margin is also fringed with fine hairs.

Its stipe is white, slender, and a lot taller than that of *C.tricholoma* - it is 2-4cm tall and often curved. This may have been *Cookeina sulcipes*, equally common in tropical America.

31 - Scutellinia sp. - Little Fire-Dish (natural size)

Fruiting-body ± 1cm across, but sometimes larger, like the one specimen shown: 1.7 cm; plate- or dish-shaped to irregular; brilliant-orange-red inside; yellowish-gray to tan outside. Margin set with short, erect, black hairs.

In groups or clusters on wood, tiny loose decaying bits, or just on the ground. Saloya, Occidente. Common in Sept-Oct.1938; also in April'41.



Chapter 6:

AN INDIAN BOY MEETS MOUNT PICHINCHA'S FLOWERS

by Mary Barnaš Pomeroy

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Especially written for aspiring young botanists.

Truth and fiction – set in the 1940's when PICHINCHA was yet barely explored by modern scientists. The characters and their names are fictitious. Any possible resemblance to persons, past or present, is purely accidental.

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Chapter 6

A N I N D I A N B O Y

M E E T S M O U N T P I C H I N C H A ' S F L O W E R S

b y
Mary Barnas Pomeroy

It was two hours before dawn - the day of the expedition! Hilario Gualacoto knocked at the iron gate in the tall adobe wall behind which he knew every tree, shrub and flower.

It was 'his' garden. He had served Professor Flores - well-known Quito botanist and artist - for three years as gardener. Besides, he had taught himself to read and write the Spanish language. His parents were illiterate Quechua Indians from the village Machachi. They had no idea of their own children's ages. Hilario figured he must be about eleven years.

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Chapter 6

Again he knocked, but just then, Professor Flores - also known as Don José - appeared in the Spanish doorway of his villa. His flashlight leaped toward the gate. Roosters crowed as the big key was turned and the gate sprang open.

"Muy buenos días, Hilario," said Don José. "Are you ready for our great ascent of old Mount Pichincha?"

"Sí, Profesor!" Hilario felt excitement. He had anticipated this trip for months.

"Come in and help me see if we have everything we need!"

"Con mucho gusto, Profesor - with pleasure!"

The professor's wife had put up lunches and there were two knapsacks with ponchos, plant presses, blotters and notebooks.

Professor Flores nodded with satisfaction when he helped Hilario put on the smaller knapsack and the vasculum. Then he climbed into the cinches of his big sack and the straps of his camera. Hilario in turn gave him a hand.

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"I brought pinol and caña de azúcar - sugar cane -," said Hilario proudly. "It will keep us from starving for many days!"

"Bueno, Hilario, muchas gracias! But I don't expect to be gone more than a day. You and I are fast hikers. Yet it's well to be prepared. Entonces, vámonos - let's go!"

In no time at all, they had dropped down from 'La Floresta' - an outskirt district with new homes - to the main level of Quito. Their eager footsteps on the pavement echoed back from house and garden walls. They marched by 'Campos Elisees' to the foot of the great Pichincha - a black mass against the starry sky. The few dim city lights helped them occasionally to avoid holes in the dusty street, but the magnetic pull from ahead made their steps quick and light.

"No hay borrachos - no drunks - today," said Hilario.

"It's just a bit far from the tiendas where they sell chicha."

"Sí, Profesor." Hilario hesitated. "A mí no me gusta estar borracho - I don't like to be drunk."

"Good for you! A botanist should never be drunk, al-

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though chicha is brewed from maize - a useful plant."

"Maíz is best as machica! That makes strong. I meant to bring some, but brought pinol instead."

"Both are great foods, Hilario. I prefer pinol, so you did well. We may need it."

They had come to an impenetrable wall of mud and agaves - the Ecuadorean way of separating fields and pastures. The professor halted and looked about him. "Here is my passage! We have to get through it to hit my trail. Give me a push, Hilario!"

Don José ducked and squeezed and Hilario pushed, and finally they were on the hidden path. Turning left, they started to climb almost at once.

"I can smell my 'Santa Lucía' hedge," said Don José.

"Esto - como salchicha de hígado - liver sausage?" asked Hilario.

"Sí, exactly. You can find many plants that way in the dark."

"This shrub has two other common names, Profesor. 'Aya-rosa' and 'rosa del muerto'."

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"I hadn't heard of these. Thank you for telling me! You'll have to give me all the Indian and Spanish names you know for the botanical ones I'll tell you. That's a deal!" the professor shook Hilario's hand. "This is Lantana rugulosa." (1)

"Véase, Profesor! I begin to see the white stars of our'Quito chicoria' along the trail and in the potreros beyond."

"Your night-eyes are good, Hilario. These chicories flat on the ground are among the most common flowers around Quito. Archirepherus quitensis (2). Soon we shall leave them behind for other stars. Ah, here is Duranta triacantha (3) somewhere! Can you smell this delicate perfume?" Reaching for the hedge, Don José stopped. "Yes, I feel its spines."

Hilario somehow could see the plant. "It has lavender-and-white flowers, right? We call it 'chive-caspi' or'casha mote'!"

"Again you give me two names! You're quite a muchacho! I better tell you the family to make up for it. It's in the

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Verbena family or Verbenaceae, same as Lantana."

Hilario was pleased he knew so many names. But there was lots to learn and he knew he'd have to write down all these scientific names in their correct spelling. The professor would have to help him - - -

They panted a little when they reached the top of the 'cherrera del Pichincha'- Pichincha waterfall, at about 9800'.

"Bien hecho, Hilario - well done!" Professor Flores gave his companion a friendly pat on the shoulder. They rested under the graceful arches of mountain bamboo.

"Gracias, Profesor!" Hilario, glad of the break, quickly took off his hat, made a dip in it and filled this with ice-cold water from the little rapids above the great falls below. He offered Don José a drink, then enjoyed one himself.

It was getting light. Equatorial dawn is of short duration. Hilario pointed to a lush place beside the rushing stream, "Profesor, vee 'bolsitas' - little sacks!"

"That name describes them perfectly - lemon-yellow pouches! Botanically, they're called Calceolaria hyssopifolia (4). Look higher above! There grows another species - C.crenata (5)-

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one of the showiest ones. We have many other species of '<u>bolsitas</u>'and most of them love humid spots."

Their searching eyes discovered other herbacious plants thriving in this habitat. There were two species of 'Indian paintbrush', both with bright-red bracts - <u>Castilleja stricta</u> (6) and <u>C. arvensis</u> (7). Also two kinds of <u>Alonsoa</u> - closely related to each other - one with white flowers - <u>A. lactea</u> (8) and the other with brick-red ones - <u>A. meridionalis (9)</u>.

FI call them '<u>caritas</u>' because they resemble faces with bonnets," Hilario commented. "What family do they belong to?"

"The <u>Scrophulariaceae</u>. I always think it's a dreadful word to say." Don José chuckled when Hilario tried to repeat it. "You'll learn. By the way, the fruit of both <u>Alonsoa</u> species are like tiny chilis and the plants emit a paprika scent, and both <u>Calceolaria</u> and <u>Castilleja</u> also belong to this family."

Reluctantly, they tore themselves away from this refreshing place. They climbed to a portion above the brush-lined <u>guebrada</u> - canyon - where a grand view opened up.

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All the surrounding snowpeaks raised their clear heads above an ocean of morning mists. And what an experience to watch Quito's awakening so far below!

City lights glittering through drifts of mist and the smoke of early wood fires made Hilario think of jewelry he had seen in Quito's shops - with stones like diamonds, so different from the beads Indian women were - -

Bells from the cathedral and many other churches were clanging and tinkling, calling people to mass. El Santo will forgive me for not attending mass, thought Hilario. He can see me better up here in the brand-new daylight, and so can God!

"There comes the sun, just behind Mount Cayambe!" said Don José. "Now we can see our floral friends better. See here - one of my favorites!"

Hilario answered with a happy grin, "Es la 'colca', Profesor! Muy linda, la colca - beautiful!" What a gorgeous shrub this was with its polished-green leaves and showy bunches of waxy-red flower tubes which ended in creamy lobes! A hummingbird quickly tasted all of them.

Professor Flores added its botanical name - Cavendishia

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gilgiana (10) in the Heather family or Ericaceae.

On one side, the trail was bordered by the precipitous quebrada with its flowering shrubbery, and on the other by a thick hedge. Hilario inhaled deeply the spicy perfumes from its hardy leaves as the sun touched them. He could see glimpses of plowed fields and green potreros - pastures - through openings in the hedge.

"We can take specimens of some of these plants on our way home," said the professor. It's best to keep climbing before it gets warm. Today is mainly for the rich flora of the páramo!"

"I can hardly wait!" Hilario kept step with Don José.

They came to an Indian choza - a hut built of reeds or mountain bamboo and mud, with a straw-thatched roof.

"Buenos días," the children called.

"Buenos días," said Hilario and the professor.

"Where are you going?"

"To Rucu Pichincha - Father Pichincha - to get flowers," said Hilario.

"Flores? en el Pichincha?"

"Sí, niña, flores."

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"We have flowers right here," said the little girl. "Ilusiones - delicate white lacy flowers - y claveles - carnations. We take them to market today. You won't find flowers on Pichincha."

Hilario answered, "Lo sé - I know - you have beautiful flowers. But the professor and I are going to get different flowers. They don't grow down here. You'll see - - "

The children only laughed and went to tell their mother. She came out and laughed too. She stared after the crazy botanists, shaking her head. Then she called, "Don't go too far! There's a dangerous bull and it's going to rain!"

Professor Flores smiled. He didn't look back. He moved at a slow and steady pace toward his destination, always upward."I expect the weather to behave for us. It's still verano - summer - , but of course it often rains up there anyway, or snows. We don't care, do we, Hilario?"

"No, Profesor!"

They came to a large potrero. Spectacular clumps of Lamouruxia virgata (11) with its magenta flower tubes interrupted it. The meadow itself was covered with trailing 'evening primrose' - Oenothera tarquensis (12) - with its

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delicate red-and-yellow blossoms. Then there was a member of the Buttercup family or Ranunculaceae - Ranunculus Bonplandianus (13). Also a Composite - Senecio pimpinellaefolius (14). Both had bright-yellow flowers.

In spite of their slow pace, they had to stop more frequently to get their breath. The potrero narrowed down and so did the quebradas on both sides."We are wearing halos, Profesor!" Hilario exclaimed as he watched his own shadow climb ahead of himself. Always, the bright light area in the dew-wet grass remained around his head.

"The sun behind us, the slope in front of us, the dew-drops plus the angle of our vision - all these make this early-morning-magic," said Don José."But, do you see what I see?"

Forgetting about his halo, Hilario looked toward the quebrada thicket on the left. "I have never seen this bush," he admitted.

"Brachyotum ledifolium (15) in the Melastomataceae. I'm sorry about its name. It's hard to say."

Hilario smiled. "It's good you knew its name, because I don't know a common name for it."

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"Sí, our scientific names may be difficult, but they are understood all over the world," said Professor Flores.

"The red part of these flowers reminds me of the lamp on your desk, Profesor!"

"Right you are, Hilario!" Don José patted Hilario's shoulder. "That part is the calyx which later contains the fruit. And note how its greenish-yellow petals are closed windmill-fashion. See the leathery leaves with their three main parallel nerves. All fine characteristics."

"Sí, Profesor!" Hilario took it all in.

"Here is one of our 'barberries' which also grows near Quito. Berberis rigidifolia (16)," said the professor.

Hilario beamed and said, "We call it 'carrasquillo'."

"Muy bien, muy bien!" Professor Flores chuckled. Then, looking down into the quebrada, he pointed out to Hilario Barnadesia berbereides (17), the latter part of its name indicating the similarity of habit between this and 'carrasquille'. Small oval leaves and long spines. But these flowers were pink, somewhat like a thistle's. "Of course it belongs to the Composite family while your 'carrasquillo' does not. It is in a family all its own, the Berberidaceae."

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Hilario became acquainted with another composite - Liabum scandens (18), and a climbing 'amaryllis' - Bomarea Caldasii quitensis (19). He marvelled at its umbel of orange-red, bell-shaped flowers with polkadots inside them. They grew from a bulb, said the professor. It was hard not to linger too long, but keep climbing, climbing, while all these things were so fascinating.

The path now followed the quebrada on the right and there were groups of tall-stemmed, leafless flowers which caused Hilario to run toward them. "They chose the sunny side of the quebrada, Look, they cover its entire grassy slope!" he called to the professor, who was panting to catch up.

"Qué linduras - what beauties!" he exclaimed. "And they belong to the Amaryllidaceae like Bomarea, the vine we just saw."

Each erect stem bore from four to nine salmon-colored, green-tipped, waxy flowers - long and pointing down.

"There is o n e pale yellow one among all these pink ones," said Hilario excitedly.

"What a good eye you have for these things," praised

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the professor. "Yes, I have occasionally found this variety. But it is all the same species - Phaedranassa chloracra (20 a & b). There is a fine stand of them on the slope toward Guápulo. So you see, they are not quite so choosy about altitude."

A few steps further, Hilario again stopped and turned to call, "Profesor! Veo 'campanitas de fuego' - I see 'fire bells' - they must be 'amaryllis' too!"

"They are, they are, muchacho! Stenomessen aurantiacum (21) is their formal name. But we should use your name, that's a perfect one! Just look at these fiery bells!" Don José looked enraptured. "I'd like to take some specimens of these, but it seems better to keep ascending while the going is easy. Still - my fingers itch to get busy - - "

They passed one last postage-stamp field where an Indian plowed with his ox. "It's going to rain!" he called to them.

"These people all seem so sure about the weather," said Professor Flores. "It feels like a grand day for our hike to me."

"Sí, Profesor! And see how we have climbed!"

They were well above all eucalyptus - the only fo-

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rests planted around Quito and other towns of the inter-Andean basin. Quito itself was only partially visible. But the broad arid valley of the San Pedro river and the hazy-blue cordillera were breath-taking. And the highest peaks!

"El Cayambe, Profesor! El Antisana y Cotopaxi - almost free of clouds! We're lucky!"

All these snow-capped giants shone silver-white. Only Cotacachi were a small cloud bonnet. Hilario forgot the strain of climbing as he felt himself bound for those splendid peaks - on the wings of his eye-sight!

On their way once more, they were startled by a crashing sound in the brush. It came closer.

"Stop, Profesor! Un torro bravo - a mad bull!"

"Hide yourself quickly, Hilario! Your red shirt could annoy him - - quick!"

Hilario didn't know where to go. One spot in this thicket would be as good as another. So he ducked down right by the path. His vasculum slid off and fell with a loud metallic rattle against a stone. "Caramba!" escaped him as his heart beat in his throat. He saw the tousled

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forehead of the great wild beast just pushing through the mountain brush.

Head bent low, the huge bull jumped the quebrada on the left of the path and flew straight toward them. Just in time, the shiny vasculum caught his eye. Madly, he attacked it as it rolled down the trail. He chased after it, knocked it around and finally took it on his horns.

Peeking out from his shelter, Hilario whispered, "Profesor, he is wearing it for a sombrero. The strap is caught in his horns! He is mad at it - real mad!"

"De veras! The vasculum may be ruined and lost, but it may save our lives. This bull is a solitario - a very dangerous bull - perhaps the very one the woman talked about - - "

Still in ambush, they began looking around and became aware of the first slender-stemmed 'gencianas' and a few bunches of 'páramo grass'. We're getting into the páramo or pajonal," said Don José. "Here is another member of this new zone of vegetation - the 'mountain fuchsia' - 'fucsia silvestre'- - "

But Hilario was still concentrating on the racket of mad bull and vasculum, apparently growing more distant, he

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noticed with relief.

When finally no more noise could be heard, he ventured down the steep trail. After several curves he stopped. Laughing, he ran back to call the professor. "Venga, Profesor! Venga a ver - come see - the funniest thing!"

Professor Flores was just stretching himself after these moments of discomfort in the bushes. "Qué hay - what is it - Hilario?"

"Come! You must see this - you'll be happy!"

Down the path they went and there - dangling from a beautiful arch of Phrygilanthus pycnanthus (22) - above the middle of their trail - was the vasculum - safe and sound!

"The cleverest bull indeed!" exclaimed Don José. "How good of him!"

Hilario conveniently climbed a rock to get hold of the strap - so well anchored among the slick foliage. He had to break off the flowering branch, but that was a welcome necessity.

"Qué lindura!" Don José's face lit up like one of his flower children in the sun. "What long orange corollas and slender red petals! It is a semi-parasite growing on a tree-like composite."

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Hilario admired the showy blossoms. "Should we put this in the press, Profesor?"

"Sí, hijo! We mustn't miss this one, since the wild terro started us collecting! This is how you do it - - "

The specimen was placed neatly in its folded newspaper, between blotters. Then the wooden press panels were strapped to both sides, like the covers of a book.

Hilario learned fast. He and the professor put away many fine specimens, among them Gentiana swertioides (23) with its tall branching stems and purple flowers. The biggest branch they took was from Siphocampylus giganteus (24) - almost a tree with large pale-yellow campanula flowers with skunk-like oder and bunches of huge rough leaves.

Then they left all mountain brush behind. Exactly at noon, they reached the first summit - Cruz Loma - 13,153 feet above sea level. There was the white bench mark and the weather station of the observatory. The wind was strong.

"Look at our shadows, Hilario!"

"They are exactly underneath us, aren't they, Profesor?"

"Right! And did you know that this is so because we are almost on top of the equator?"

Hilario shook his head and the professor explained

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that the equater is an imaginary line around the middle of the earth. I'm going to remember that, thought Hilario. Then he asked, "Is this also why Quito has been called '<u>La Cara de Dios</u>' - 'God's Face'? Because it is in the middle of the earth and in such a high place surrounded by mighty peaks?"

"I'm sure that's why. Just look at this panorama with our beautiful city in the midst - smiling among the snow-caps! <u>Antisana</u> makes me think of a snowy crown and <u>Cotopaxi</u> of a perfect sugar-cone!"

"Yes, and I could eat it right now!" said Hilario.

"But don't let Cotopaxi fool you!" Don José winked at Hilario as he took off his knapsack. "That fellow has a hot crater in spite of its snow-white skirts and could erupt any time. It causes many of our earth-quakes."

"I know, Profesor! And being from Machachi, I'll tell you a funny story - sí?"

"I love stories - - "

Hilario began, "Well, a long time ago, Cotopaxi was so wild that nobody wanted to get very close. Nobody could. But during a quiet spell, Machachi was built. Cotopaxi resented this so much that it wanted in the worst way to spit

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rocks and lava at my little town! But, Pasochoa - there it is, rather close, and with its dark-looking crater - refused to duck its head and so protected Machachi ever since. These two volcanoes are still arch-enemies. Machachi is ever grateful to Mount Pasochoa."

"I would be too," said Professor Flores. "Thank you for telling me. I had never heard that story."

Hilario's gaze still swept along the horizon. "I see a tiny snow-peak very far away. It must be one of our very great mountains. I think - Chimborazo?"

"I see it too. You're right, Hilario. The great Chimborazo can be seen from here on very clear days. Luck is with us."

Refreshed, they settled down to eat lunch. But soon the professor's interest was again directed toward his friends - the wild flowers. He was on his hands and knees, exclaiming, "Qué preciosas, las 'genecianas' ! Qué bellas!" He shot a number of close-ups.

Although Hilario sat still spell-bound, he felt he must assist Don José with collecting. The love of botany had brought them up here. So they must concentrate on Pichincha and its flowers. He saw Rucu's crags towering

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still a long way off - -

"Most plants up here seem to be flat on the ground in pads or cushions or stars," he said. "Why don't they have any stems, Profesor?"

"It's nature's way of protecting these delicate blossoms from the strong winds. See here - these closest to a bunch of páramo grass have their flowers wide-open. while the less sheltered ones over there have them half-closed."

"Nature does things right," mused Hilario. "What are these flowers?"

"Gencianas, muchache! Here are the two forms of Gentiana sedifolia (25 a & b) - the white and the sky-blue, both with yellow throat and sometimes tiny dots inside. Buds twisted up toward the right, like all gentians."

"Me gustan, Profesor! And what is this fantastic yellow thing? Look - a whole group of them!" Hilario got excited. He unstrapped the presses.

"It is the most surprising of all gentians - Halenia Weddelliana (26). Doesn't it look like a yellow-green 'columbine'?"

"De veras, Profesor!" Hilario's eyes were dazzled as

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he hunted among hundreds of rosettes of hard, shiny leaves and what looked like carpets and pillows embroidered with daisies. "What are these?"

Professor Flores pointed out, "The round cushions that look so inviting are Werneria humilis (27). Lovely daisies, but don't accept their invitation. Their leaves are hard and pointed as nails. Then the large daisy spread flat on the ground like a fried egg is Werneria nubigena (28)."

"Gracias, Profesor! What a good thing your scientific names are! Everything up here is new and strange, but now I've learned two Compositae." Hilarie felt like writing it all down, but there just was too much to see. Professor Flores knew them all by heart - so they could wait till they got home - - -

Other rosettes looked like green stars fallen on the ground. These seemed to be the most numerous of all. Don José said, "Valeriana rigida (29), one of the many Ecuadorean species of the Valerian family or Valerianaceae. Note the tiny flowers clustered right in the heart of the plant - well sheltered! Several species are used in medicine. You'll notice the strong scent when you dig up

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the long tap-root."

Hilario immediately set to work with his pocket-knife so as to extricate the entire plant. Its root was like the trunk of a tree! "Muy aromática!" he said. "And I don't think this valerian will fit between our blotters, Profesor!"

"We must cut off a long section of the root for sure, but the hard rosette may be turned face forward." Don José always solved all problems easily.

"Vámonos, muchacho!" Professor Flores spoke with renewed energies as both of them stood ready-packed to continue their expedition. A world of solitude lay ahead. Hilario enjoyed the wind's eery piping through the tufts of páramo grass. It was the only noise up here, except for the occasional whizz of a hummingbird darting by. The fragrance of all these spicy, hardy plants came like waves on the wind. The botanists hung on to their hats.

Don José decided it was best to drop below the wind-blown crest from Cruz-Loma to Rucu-Pichincha. A sudden calm surrounded them and the vast expanse of the páramo-clad glacial valley on their left. This separated Guagua from Rucu -

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Child from Father, which are the names of Pichincha's two peaks. Hilario listened to lonely moos of distant cattle.

"It's quite a few kilómetres to the foot of the rocks," said the professor. It's hard to judge just how many. Everything looks closer because of the thin air. I'm glad we're marching on the level for a bit - - "

They plodded on. The ground was springy and moist from the nightly rains which fell here even during the dry season. White clouds began to form around the dark pinnacles of their destination. "Ojalá no llueva - I hope it doesn't rain!" said Hilario.

"We shall see," said the professor.

The afternoon wore on. It was easy going, but the rarefied air slowed them down just the same. Don José never failed to point out new Andean beauties.

Then, looking up, Hilario saw a large bird circling above them. "Un cóndor, Profesor! Véase- qué grandote - how big!"

"Our national bird! I knew we would see him. He lives, no doubt, among these highest crags of old Rucu!" The professor's admiration showed plainly.

The great bird swooped lower as if to check on matters.

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It circled low over the two strange wanderers. Then, gradually, it seemed to get caught in a current taking it toward the deep-blue sky again and closer to Rucu's gray walls.

"Look at these gorgeous bunches of tall lavender '<u>gencianas</u>' !" exclaimed Hilario.

"Exactly, that's what they are! You can spot them now, <u>verdad?</u> And note that this tall species - <u>Gentiana foliosa</u> (30) - prefers a sheltered location - - " Professor Flores seemed enchanted. He got out the plant press to take some specimens. And, what was this dainty gentian? Flower white with pink blotches along the right margin of each lobe - - "Take a specimen of this, Hilario! I can't be sure, but it might be <u>Gentiana corymbosa</u> (31)- - "

Even Professor Flores doesn't know this one, thought Hilario. Just then, he heard his friend call, "<u>Veo !arqui-tectas</u>'! Have you ever met these wooly-coated sentinels of this high altitude? They're called botanically <u>Culcitium uniflorum</u> (32). This means that each stem has one flower head."

"I'm pleased to meet them. They look like little people! The younger ones straight and the older ones with their heads bent," Hilario exclaimed as they reached the gray-furry group.

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"We'll take them alive on our way home," said Don José. "They keep well. I should like to paint them, and see how close we have come to our toughest climb!"

"Sí, Profesor!" Hilario tried to estimate the distance, but he was distracted by more new and strange plants. "There are several groups of taller plants. What are they?"

"I see bunches of 'Chuquiragua' - very rough, spiny Composites with orange flowers - and that over there is one of the most amazing plants of the High Andes. It is 'altramuz de monte' - 'mountain lupine' - - "

As they approached it, the pyramid of child-size all dressed in white fur was clearly a lupine. Its hand-shaped leaves were spread around it on the ground. Hilario could see several more, most of them growing singly.

"I wouldn't mind wearing a coat like that, would you?" he asked. "It's getting colder."

"We have woolen ponchos with us. Maybe we had better wear them for the ascent of Rucu's crags -" On went the ponchos.

"Should we really climb these rocks today, Profesor?"

"Although it looks as if Guagua-Pichincha's crater is cooking up some wild weather, I'd like to climb Rucu. How about you?"

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"Sí, Profesor - - I believe so - - "

"Well, there is a dependable assistant! Good for you - for both of us! Guagua´s storms are often purely local. It´s just a child´s actingup. Some day, I´ll take you on that trip via Lloa. Then we can see Guagua´s fog-filled crater, and if we´re lucky, its fumaroles - - "

"What about them, Profesor? The volcano - could it erupt again?"

It´s extinct. You needn´t worry - "

"Como no, I´ll take that trip with you!" Hilario beamed again and then looked toward Rucu - their goal for today. All was peaceful in that direction.

"How about a naranja de Balsapamba?" asked Don José.

"Gracias, Profesor! And - what many good things the Señora has put in for us - - "

"She knows my spirit of adventure and thinks it wise to take a bit more than one needs - - "

"Buena la Señora!" Hilario said affectionately. He enjoyed his orange and the good cookies and chocolate and offered the professor some caña de azúcar. "Soon we´ll be high above even the páramo. No bulls will venture up there,

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I hope," He listened to a cow's moo not too far away.

"It sounds close on the wind," said Don José. "But it's many kilómetros away."

"Ojalá - I hope so! That reminds me of our vasculum. What are we going to put in it, Profesor?"

"We could wait till we get climbing and take the plants from way up high - - I should like to paint some of them because drawings are often better than photographs - - " Then his eye was caught by something like a many-armed starfish. "This is something very rare. I've never before found it here and I'm not at all sure what it is. Probably a Lysipomia - - I think maybe L. laciniata (33). Dig it up carefully, muchacho! With plenty of earth around it - - We got a treasure for our vasculum now! Family - Campanulaceae - - "

While Don José took some more close-ups of growth habits, Hilario started climbing the rocks. This was hard. Ever so slowly, he headed for some tall, bright-red flowers way above. He noticed dark clouds shrouding Rucu's peak. How rapidly changes took place up here - -

Although he gained altitude and some control over the

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oxygen shortage, those red flowers remained a long way up. Looking down, he saw Don José like a tiny spot in the vast páramo. Wasn't he going to join him soon? Well - he would surprise him with that red flower - -

Then there was a flash of lightning from Guagua-Pichincha which, by now, had taken on an ominous look. And above him, Hilario saw clouds blowing in, apparently from nowhere. his heart sank. He had better wait for Professor Flores or - should he descend?

Another lighning-streak cracked the dark clouds with silver and gold. Closer this time, and followed by a strange rumble. Hailstones began to fall. The clouds - it seemed - had become so saturated and low that they split themselves on Rucu's topmost crags. Down pelted the hail with more flashes and thunder. Below, Hilario couldn't see the professor nor, above, his flowers. Everything had vanished behind curtains of hail. "Profesor!" he shouted time and again, but no answer came.

Hilario crouched on a leeward side of the steep wall. Only occasional hailstones bounced off his hat and shoulders. He felt grateful for his warm poncho.

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He huddled there for what seemed like a white eternity. Finally, the noise abated (quieted down) and soft snow began to glide down. It kept coming, coming, and piling up around him. He watched tiny bonnets growing on top of flowers near by.

Presently the snow let up. Hilario looked up at some blue sky through a cloud window. He called, "Profesor Flores!"

Suddenly, the scene around him took on shape and color once more, except for the white accents. Then he heard a welcome sound, "Gracias a Dios, I've found you, hijo!" Don José stood close by, quite out of breath. "What a trick on us! And this altitude!"

Hilario, who by now felt rested and relieved, offered his sheltered spot to Professor Flores, who gratefully sank down in it. He said, "This rock you've been sitting on is andesita , and so is the whole big mass of Pichincha." He relaxed against the volcanic rock. "How comfortable rock can be!"

"Yes, it's made me feel ready to climb again!" Hilario grinned. "Above us is a group of nodding red flowers. What are they?"

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The professor rose. "I have an idea what it could be, but we must get closer - -" then, as they reached the lovely group, he said delightedly, "Yes, it is Bomarea glaucescens (34). You will see the similarity between these blossoms and these of the 'climbing amaryllis' near the choza - remember? It is the same genus - Bomarea."

Hilario touched one of the tall, erect stems, completely covered by dull-green, vertical leaves. Its top looped downward, the leaves spread, forming a roof above red-and-yellow bells. If only he could show these flowers to his family in Machachi, thought Hilario, and to these people in the choza - - -

Again, the search for new specimens enraptured the two. Hilario had been seized by that spirit of discovery and adventure that had moved scores of scientists and nature lovers before him. Not many Indian boys like himself had experienced this bliss. Was it the threat of dangers all around which made every detail so precious?

Suddenly, the huge cóndor sailed overhead, re-appearing between the towering peaks. Hilario's heart took an extra-long jump. Had the bird come for prey? Would it attack human

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beings - intruders in its territory?

Explorer-zeal kept him climbing in spite of this new worry. But uncertainly, he turned to his companion, "Véa, Profesor! El cónder nos ha visto - the condor has seen us!"

"Avance no más - go ahead!" came the answer.

As he climbed, Hilario stuck close to the protective rocks. He often stopped and looked around. The teeth on the crater rim of Guagua-Pichincha were clear of clouds. Everything was touched with white - even areas of the páramo. All snow-caps of the cordilleras were hidden in cloud covers. Soon they'd be able to see Quito again - - -

Late in the afternoon they reached the summit. The professor's face was pale. Hilario's own head felt light and dizzy and the wind shrieked among the pinnacles. They had to tie their hats with bandannas. They sat down, numbed by wind, cold and fatigue. Fields of eternal snow and light volcanic debris formed jagged patterns. There was 'La Cara de Dios' and the whole world! 15,696 feet made all the difference - - -

"Are you glad we made it?" asked Don José.

"Como no, Professor! I'm glad we didn't listen to the

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woman who grows the 'claveles' - although she was right. It's worth every effort to reach the top of a mountain. Now Pichincha is really 'our' mountain! What a different world! A lonely world!"

"Not so lonely," said the professor, as the cóndor passed by in a searching low circle. "I'll get my camera ready - - "

Hilario saw clearly the cóndor's bald head and pink neck with white ruff! Its wingspread was at least three meters - about ten feet. What a giant!

Again it approached. Professor Flores shot it in its gliding flight - with his camera - and this was what seemed to prevent the bird from coming in for a landing - - -

Gracias a Dios, thought Hilario - - - Now it was out of sight.

Rucu's ancient extinguished crater sloped in Guagua's direction. Great tooth-like crags stood like sentinels. Hilario's eyes searched every nook. There - the cóndor settled quite close to them on a hidden ledge. And now he could see a large branchy nest with two small birds! Look, there goes its mate!" he almost shouted.

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Don José's camera clicked just at the right time. Again and again it snapped. His tele-lens would reveal more secrets."We could have used the binoculars here. Too bad we forget these - - "

Here came the other cóndor now - obviously aware of the presence of spies, just like its mate had been. Both explorers watched as if under a spell and Hilario felt sure that for once Professor Flores didn't think of plants. The howling wind was like a protecting cover, but moments seemed infinite - - - until the bulk of the cóndor swooshed by.

When Hilario dared look around more boldly, the giant bird was soaring on the winds toward higher regions.

"Would you like to spend the night here?" suggested the professor."I spotted some fine overhanging rocks further down."

"Me gustaría - I would like it, Profesor!" Hilario realized that there really was no other alternative.

It was pleasant to descend from this awe-inspiring domain of snow-powdered steeples. Lightning and thunder were again active in new cloud formations around Guagua - the

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ever-screaming child.

"This may well be the beginning of the wet season," said Don José. "This is 'big weather' ! Just listen to those rumbles! After all, it is the end of September - - "

"Sí, Profesor! But it's the most wonderful day I've ever had. And look! I see something for our vasculum - those yellow and lavender carpets in the sandy spots!" They nearly stumbled over each other to reach the flowers.

"The lavender must be a '<u>malva</u>' - 'mallow' - yes, it is <u>Nototriche Pichinchense</u> (35) in the <u>Malvaceae</u> or <u>Mallow</u> family. I found it once on Guagua. And can you guess the yellow ones?"

"Composites!"

"Good, Hilario! You're recognizing your families. Soon you will remember your genera and species."

Quickly, Hilario responded, "I think, the genus must be <u>Werneria</u>, like the two kinds we found all along, beginning on Cruz Loma."

"Right! And the species is <u>Werneria pumila</u> (36). Some day, when you discover a new species, which will likely happen,as many plants are yet unknown, I shall name it after you, 'Gualacotense" or 'Hilariense'."

Hilario grinned with modest approval, "That would be an honor. I will try to become a good botanist."

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"You're well on your way," was Don José's answer.

As they descended some more, new views and interesting plant groups were taken in. Presently, the professor's face began to shine in recognition of an old friend. He asked, "What do you think is the fuzzy-white fellow over there?"

"It looks a lot like these other fur-clad groups we came across in the pajonal. The ones you intend to take home on the way back. Is this another - 'arquitecta' ?"

"Muy bien. It is Culcitium nivale (37). It also has o n e flower head to a stem, but grows closer to the snow-line. Therefore, it wears an even woollier, whiter coat! Let's take some good samples without pressing. Mi Señora will like a bouquet that doesn't wilt. And I m u s t paint them!"

Hilario chose specimens in various stages of development. He tied them carefully in his kerchief, saying, "Up here, the taller plants are either very tough, leathery and prickly, or else, furry. And the little plants spread out on the ground."

They found a sheltering cave, but as they entered it

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to take refuge from the next snow-storm, a gray lobo - a small Andean wolf - sprang out of it.

"This must be 'his' cave! But it is such a fine shelter that I feel we can take a chance. These lobos don't see many humans and haven't been known to attack them - - " Professor Flores was glad to get Hilario's approval. The world outside was white again, but once more, the weather passed. Several more whirls of snow followed. No lobo returned.

"Time for your pinol, Profesor!" Triumphantly, Hilario took a little sack from his pocket, saying, "I'll mix it with snow and you'll have the best helados!"

"Gracias, muchacho!" Don José patted Hilario on the back. "You're good to have along on an expedition."

The ice cream tasted delicious although they would have liked something hot better. They had some sandwiches left, raisins and fruit. And sugarcane for dessert!

As they sat munching, the lobo reappeared on noiseless pads. It came within about ten feet of them, froze and stared at them - - -

Hilario and the professor remained as motionless as the apparently tame animal and stared back at it - - -

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Just as they began to wonder how long this would continue, the lobo turned around and descended. It had come to check! Don José said under his breath, "Lucky we haven't any meat here. He might have come after that - - and - - no feeding if he should come back !"

They collected, scribbled notes and photographed until a fantastic sunset claimed their attention. All around them, strange fiery spotlights chased over the infinite scene - otherwise cool in dusk's shadow. And just for a moment, Mount Cayambe glowed as if lit from inside. Then it was swallowed up by piles of gold and purple cloud billows.

Professor Flores managed to light a little fire of dry arquitectas and other leaves. They heated snow in their metal cups and had a hot drink after all. A bit of pinol added, made it a nourishing drink.

Then it was dark. Tired out, Hilario huddled close to Professor Flores in the cave. He didn't feel the cold. The hardships of an explorer were greatly outweighed by the rewards. Dangers were somehow averted. There was protection, he thought. How beautifully this day had turned out! He would gladly meet many bulls, condors and lobos - - -

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Just then, he heard panting and the soft padding of paws. Something brushed by him and he knew who it was. With sudden alarm, he whispered, "Profesor, el lobo está aquí, what are we to do?"

Undisturbed, Don José said, "Quieto, muchache! Just leave him to himself and he'll leave us in peace!"

Later, when the beam of their flashlight illumined the far end of the cave, the lobo was curling up to go to sleep. It didn't seem to pay any attention to its ever-night visitors. It didn't ever growl but seemed pleased to share its den!

Quickly, all doubts as to their safety left Hilario. By the side of the professor, things always worked out in an orderly fashion. It must be that man's profound love of all nature! He too - Hilario - would climb many more dangereus crags to discover something rare or new - just like today! Soon they'd take the trip to Guagua's crater - -

His thoughts raced on - - - First thing he would do tomorrow morning would be to pick a large bunch of these gorgeous tall gencianas and many other flowers they had admired, to add them to the show pieces of the vasculum.

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On their way home, he would show them to the people in the little choza, who didn't know that there were thousands of beautiful flowers on Pichincha! All they knew were claveles and ilusiones, maybe calla lilies, cannas and roses. Nothing more. Somehow they must have ignored all the flowering shrubs of their quebrada - - - One must have taken a trip like this one to really understand - - - - - - -

Flowers and foliage of all colors and shapes, snow-contoured rocks, pinol sherbet, Professor Flores and the snoring of the lobo mingled into a beautiful pattern of dreams for Hilario on top of the Andes.

THE END

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Chapter 6

SOME EXPLANATIONS - SPANISH AND INDIAN WORDS

Agave - Century plant, rows of which bordering road-sides and fields are a typical sight in the high plateaux of the Inter-Andean Basin.

Antisana - 5,704 m 18,717 ft. glaciered, extinct volcano of the Eastern cordillera of the Ecuadorean Andes.

aquí - Sp. here

borrachos - Sp. drunks

caña de azúcar - Sp. sugar cane. Important product of the highlands and semi-tropics of Ecuador.

Cara de Dios - Sp. 'Face of God', name for Quito, capital of Ecuador.

Cayambe - 5,790 m 18,996 ft. snow-capped, glaciered giant of the Eastern cordillera.

Chimberazo - 6.310 m 20,561 ft. glaciered giant, highest of all. Western cordillera.

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cherrera - Sp. a high waterfall

cheza - Sp. bamboo-and-mud hut

cordillera - Sp. mountain range

Cotacachi - 4.939m 16,204 ft. cone-shaped peak with crater lake at its foot. It belongs to the Western cordillera and is located in Northern Ecuador.

Cotopaxi - 5,897 m 19,347 ft. still active volcano of perfect conical shape and smooth-white skirts. Eastern cordillera.

¡Como no! - Sp. why not? Of course!

Cruz-Loma - 4,010 m Sp. Cross Hill - 13,153 ft. first summit in skirts of Pichincha, when approached from Quito.

de veras - Sp. of a truth - really

Dios - Sp. God

entonces - Sp. then - at that time

Floresta - suburb of Quito

Guagua - Quechua for 'child' - here used as name given to the younger one of Pichincha's cratered peaks, still with hot fumaroles.

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Guápulo - Indian village below Quito

gracias - Sp. thanks

gracias a Dios - Sp. thank God!

helados - Sp. ice cream

hijo - Sp. son, here used as endearing title

lobo - Sp. wolf . The Andean wolf is small and gray and does not travel in packs.

Lloa - small village on South-Western skirt of Pichincha There you can rent horses to ride to Guagua-Pichincha.

Machachi - small town south of Quito. It is known for its mineral springs. 'Agua Guïtig' - Ecuador's sparkling water is bottled there. You can swim in a large pool of mineral water - rather cold.

machica - toasted cornflour mixed with sugar and cinnamon - an Indian food.

me gustan - Sp. I like them

muchacho - Sp. boy

muy bien - Sp. very good - very well

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muy linda - Sp. very beautiful (fem)

naranja - Sp. orange

naranja de Balsapamba - an outstanding variety of orange, grown in Balsapamba. The fruit is unsightly greenish-orange-brown, but extremely juicy and sweet.

no hay - Sp. there'isn't any - there aren't any

niña - Sp.little girl

¡Ojalá! - Sp. God grant!

¡Ojalá no llueva! - Sp. God grant it doesn't rain!

pajonal (moorland) - Sp. high grasslands, consisting of huge tufts of páramo grass and Andean wild flowers, surrounding snow-capped giants.

páramo - Sp. same as previous. Used in diminutive 'paramito', it means the fine drizzle of this high country

Pasochoa 4200m - extinct volcano near Machachi. Its crater is wide-open and densely forest-clad.

Pichincha 4,785 m - 15,696 ft. mountain - symbol of Quito

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pinol - barley-meal mixed with brown sugar and spices. A favorite Indian food.

petrero - Sp. meadow - pasture

preciosas - Sp. (fem.pl.) precious

¡Qué bellas! - Sp. (fem.pl.) how beautiful!

quebrada - Sp. canyon

Quechua - language of several of Ecuador's Indian tribes. It has many dialects.

quieto - Sp. quiet - peaceful

Quito - 2,850 m / 9,350 ft. high capital of Ecuador - pop. 450,000. in 1982 : 8,945,000.

Rucu - Quechua for 'father' - here used as name for Pichincha's highest peak - 4,785 m / 15,696 ft. - with extinct crater. Its crags are visible from Quito. They are white during the wet season - from October till May.

solitario - Sp. a wild bull who has nothing more to do with others of his kind. Usually dangerous.

tienda - Sp. small shop

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vasculum - cannister for botanizing

vee - Sp. I see

verano - Sp. summer

¿verdad? - Sp. true? right?

Chapter 6 (DG):

ILLUSTRATIONS

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DG

Santa Lucía (1)
aya-rosa
rosa del muerto
Lantana rugulosa
(Verbenaceae) 169



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Achyrophorus

chicoria de Quito
Achyrophorus quitensis
(Compositae)
Asteraceae

DG
2

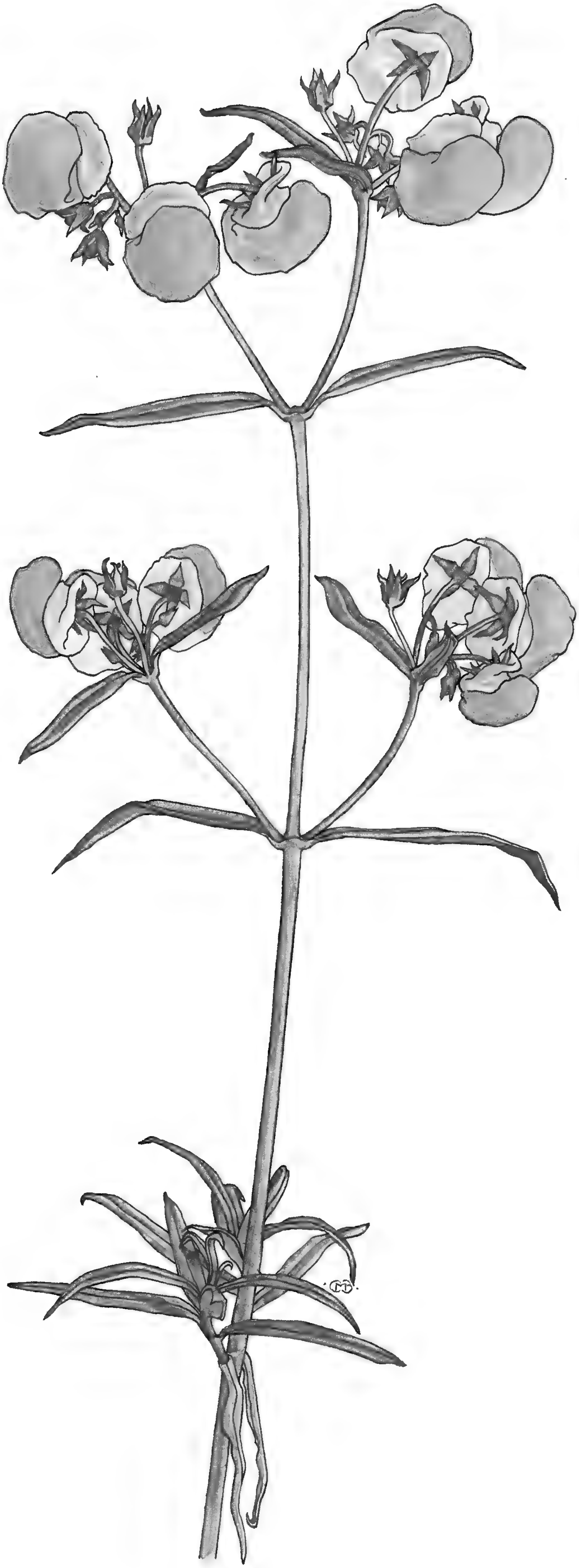
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chivo-caspi
casha mote
Duranta triacantha
(Verbenaceae)

DG
3



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Calif.

bolsitas
Calceolaria hyssopifolia
(Scrophulariaceae)

DG
4

CB 123P.

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(6)

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California (CB. 1933)

Zapatitos
~~bolsitas~~ DG
Calceolaria (5)
crenata ~~tam.~~
(Scrophulariaceae) 20 ~~20~~)

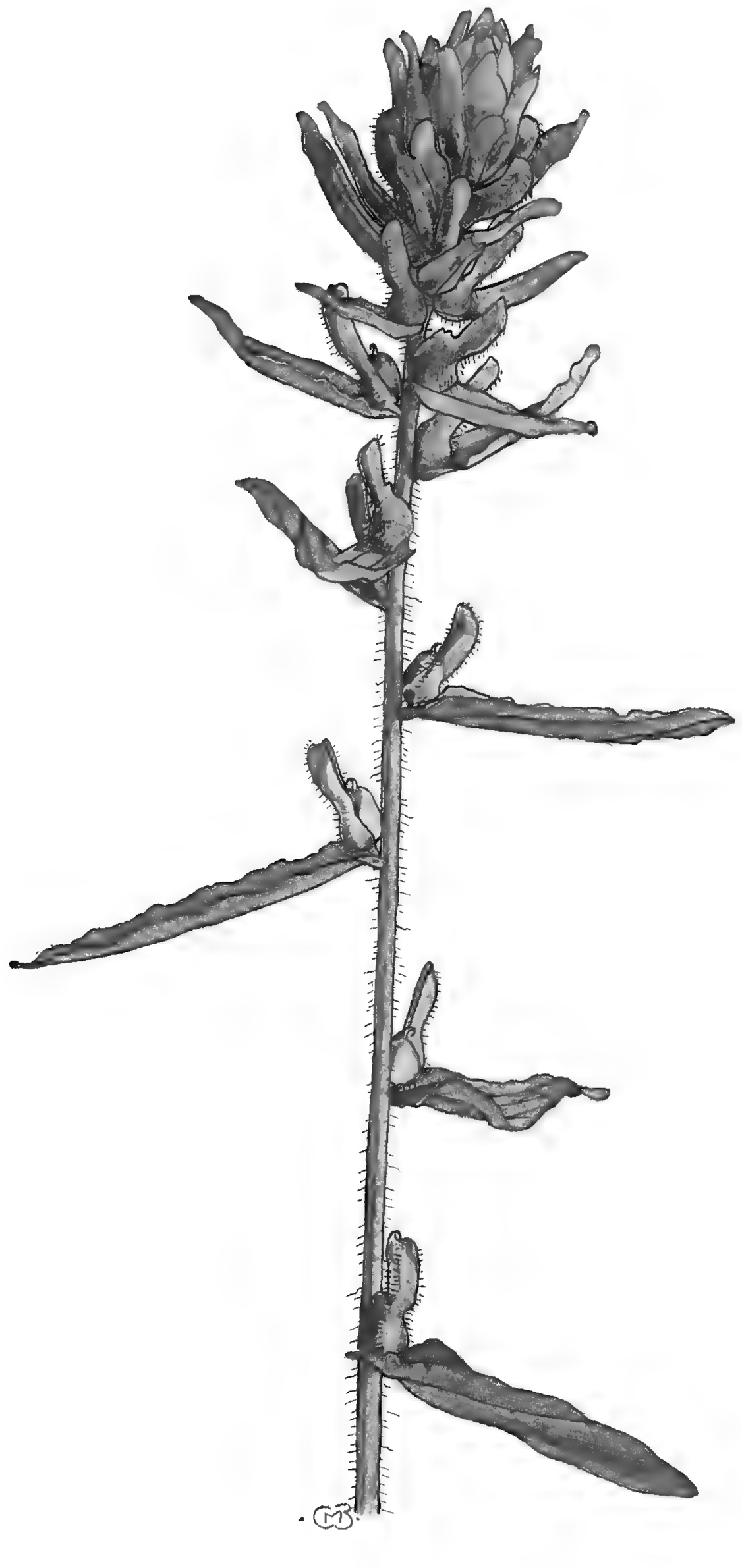


(7) (MB("))

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Indian paintbrush

Castilleja DG
stricta (6)
(Scrophulariaceae)
(26)



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Indian paintbrush
Castilleja arvensis
(Scrophulariaceae)

DE
7

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(2)

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Caritas blancas
Alonsoa lactea
(Scrophulariaceae)

DG
8

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Caritas rojas
Alonsoa meridionalis
(Scrophulariaceae)

DG
9



4 MB (C) 1113?

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"Colca"
Cavendishia
gilgiana
(Ericaceae)

Do
10

167





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DE
11

Lamouroxia
virgata
(Scrophulariaceae)

45 45



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Oenothera tarquensis
(Onagraceae)

DG
12



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DG
13

Ranunculus Bonplandianus
(Ranunculaceae)

203.



(C

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Grossul or Ragwort sp.)

Senecio pimpinellaefolius (Compositae)

DG 14

72



Brachyotum ledifolium DC
(Melastomataceae) 15

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California

Carrasquillo
Berberis
rigidifolia
(Berberidaceae)

DG
16

~~195~~
195



~~10~~ MBC 1933

DG
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Barnadesia
berberides
(Compositae)
Asteraceae

468
168



DG
18

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Liatris scandens
(Compositae)
Asteraceae

176
~~176~~

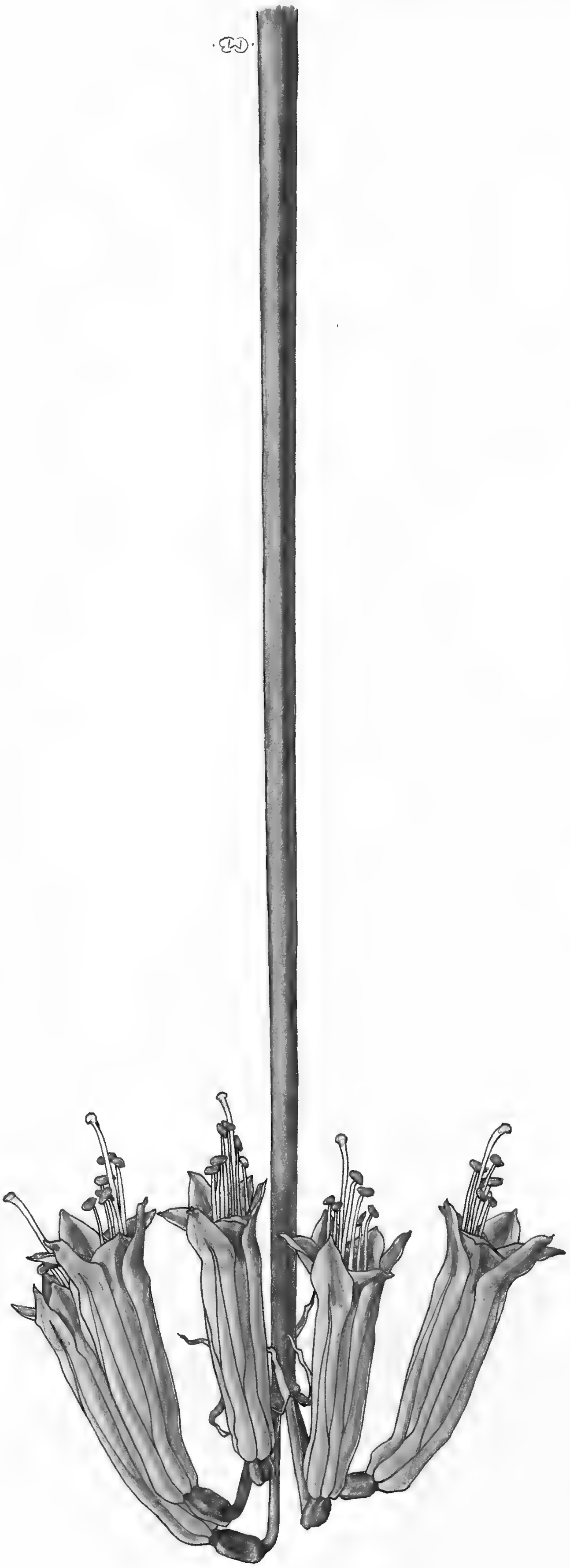


DG
19

Bomarea Caldasii quitensis
(Amaryllidaceae)

(EB. (e ?MB?

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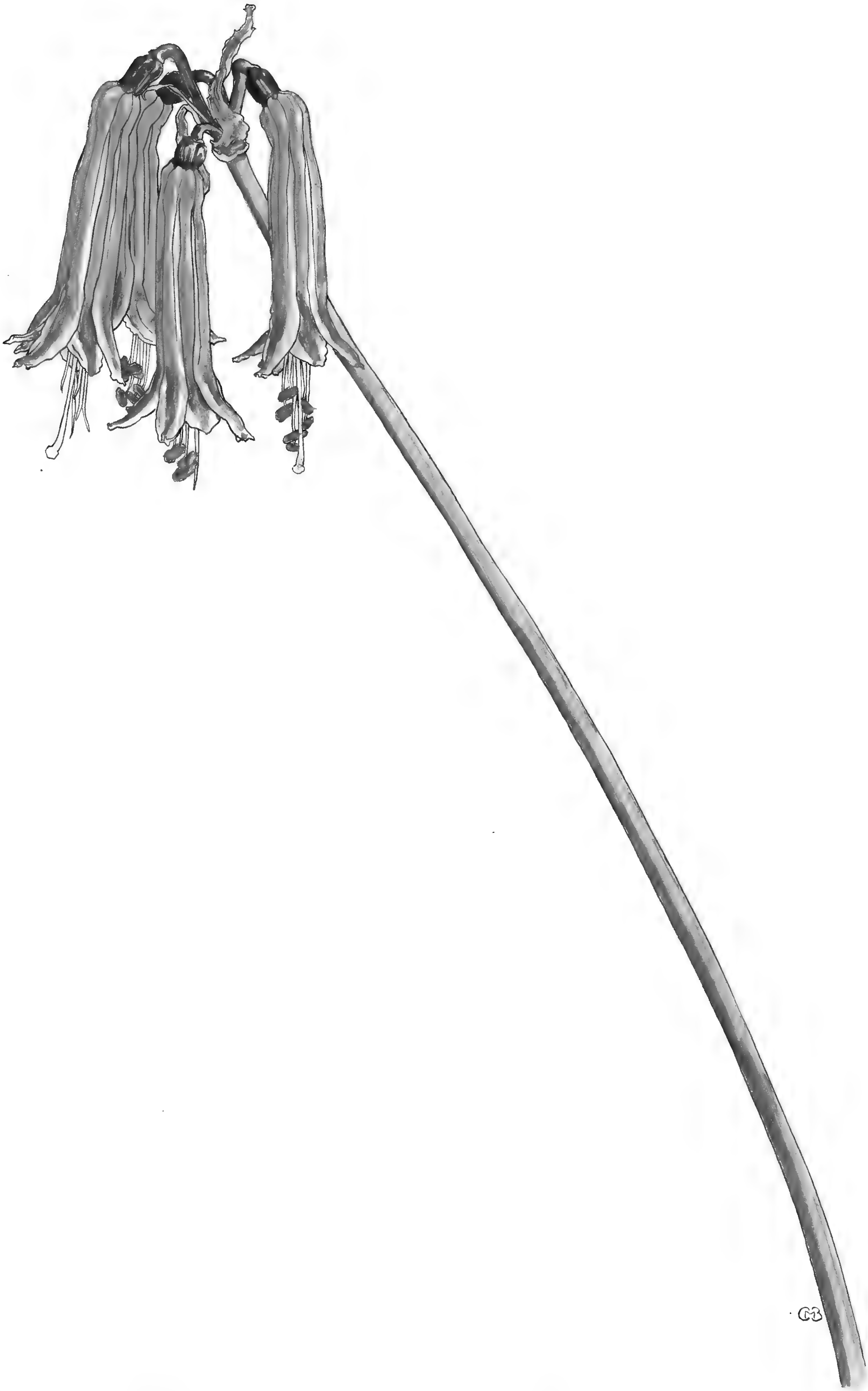
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DG

20 a

Phaedranassa
chloracra
(Amaryllidaceae) ~~60~~ 60

Liliaceae



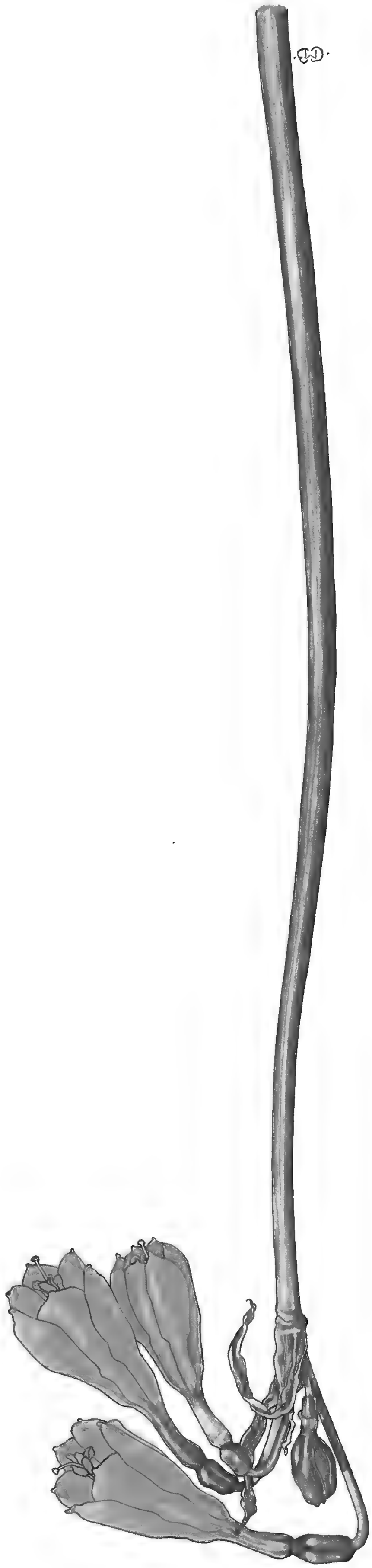
Phaedranassa chloracra (Amaryllidaceae)

(C)
(MB) Mary Parnas Pomeroy MBP
8[illegible] Arrila Road
Carmel [illegible] Calif 93924

DG
20 b

Phaedranassa
chloracra
(Amaryllidaceae)
Pfitzer

204.



Mary [illegible] Gormley
[illegible] Road
Carmel Valley, Calif. 93924

Mary [illegible] Gormley
[illegible] Road
Carmel Valley Calif. 93924

DG
21

Campanitas de fuego
Stenomesson aurantiacum
(Amaryllidaceae)
Liliaceae

115



popa

DE
22

Phrygilanthus pycnanthus
(Loranthaceae)

214.

(C)
(MB Mail Boxes Etc. 9123)
Carmel, Calif 93924



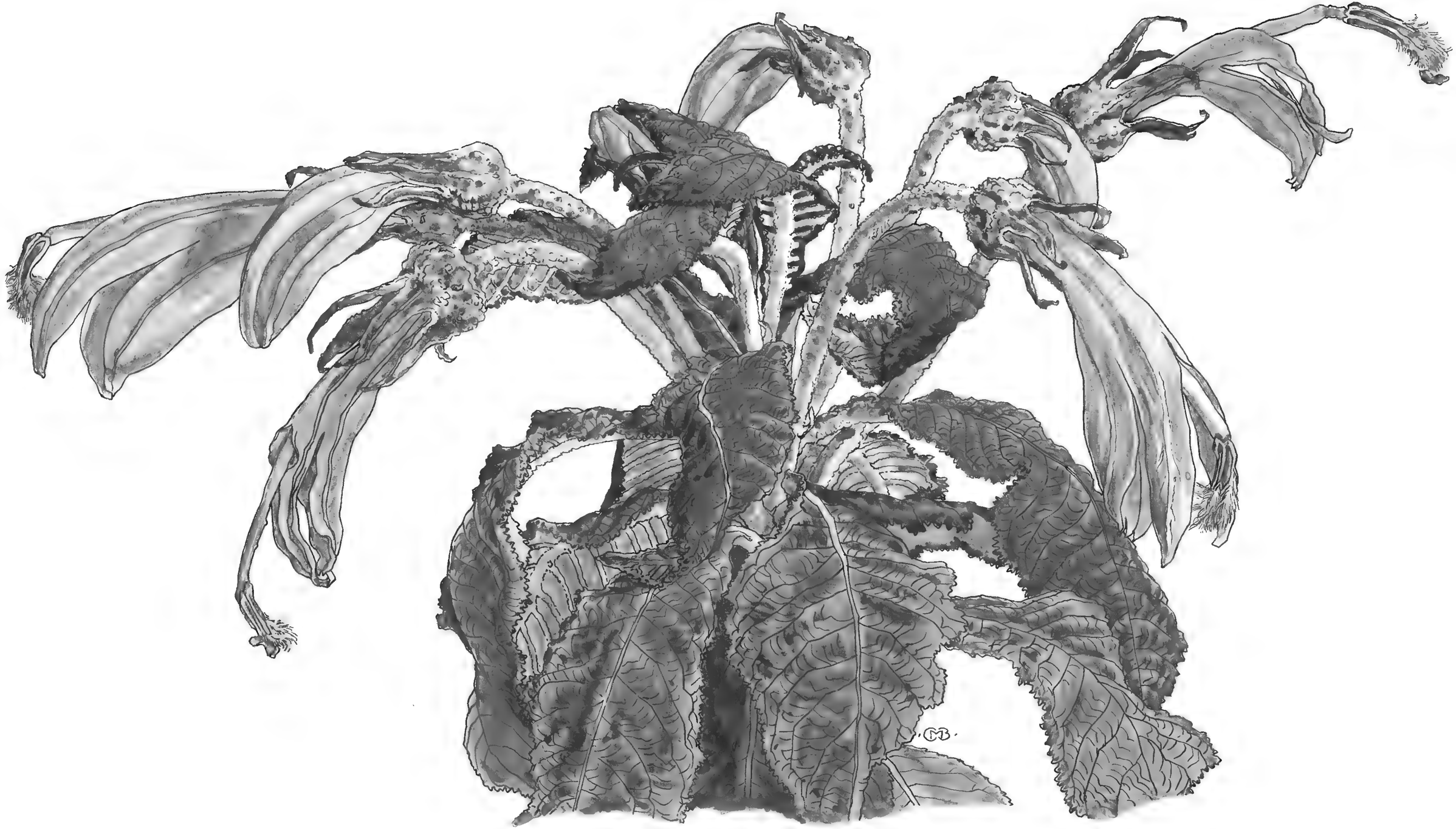
Gentiana swertioides (Gentianaceae)

Gentiana swertioides
(Gentianaceae)

DG
23

(C

Mary Barnas Pomeroy
88 Boronda Rd., Carmel Valley, Calif.



Mary Barnas Pomeroy MBP
88 Boronda Road
Carmel Valley Calif. 93924

Herr
Catharina Maria Barnas

DE 24

Siphocampylus giganteus D.C.
~~Lobelia gigantea HBK.~~
(Campanulaceae) 215





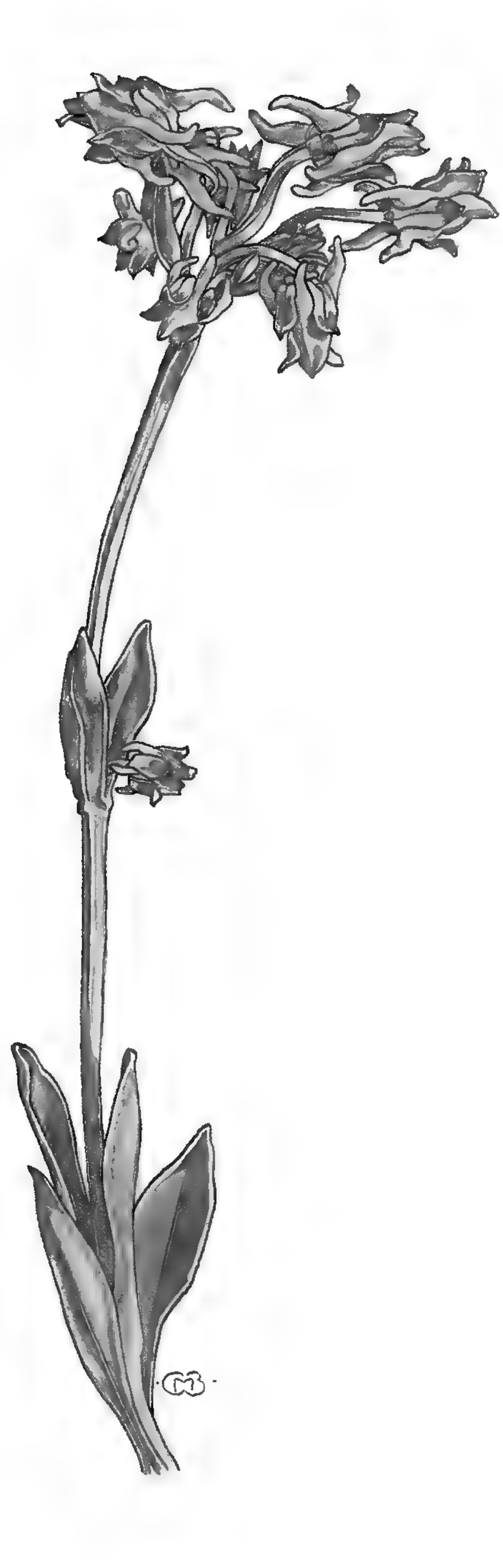
(C)

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88 Boronda Road
Carmel Valley, Calif. 93924

Gentiana scaifolia
(Gentianaceae)

DG
25 a & b

31



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88 Boronda Road
Carmel Valley, Calif. 93924

Halenia Weddelliana DG 26
(Gentianaceae)

58.



DG

(27)

Mary Barnas Pomeroy
88 Boronda Rd.
Carmel Valley, Cal. 93924

Werneria humilis
(Compositae)

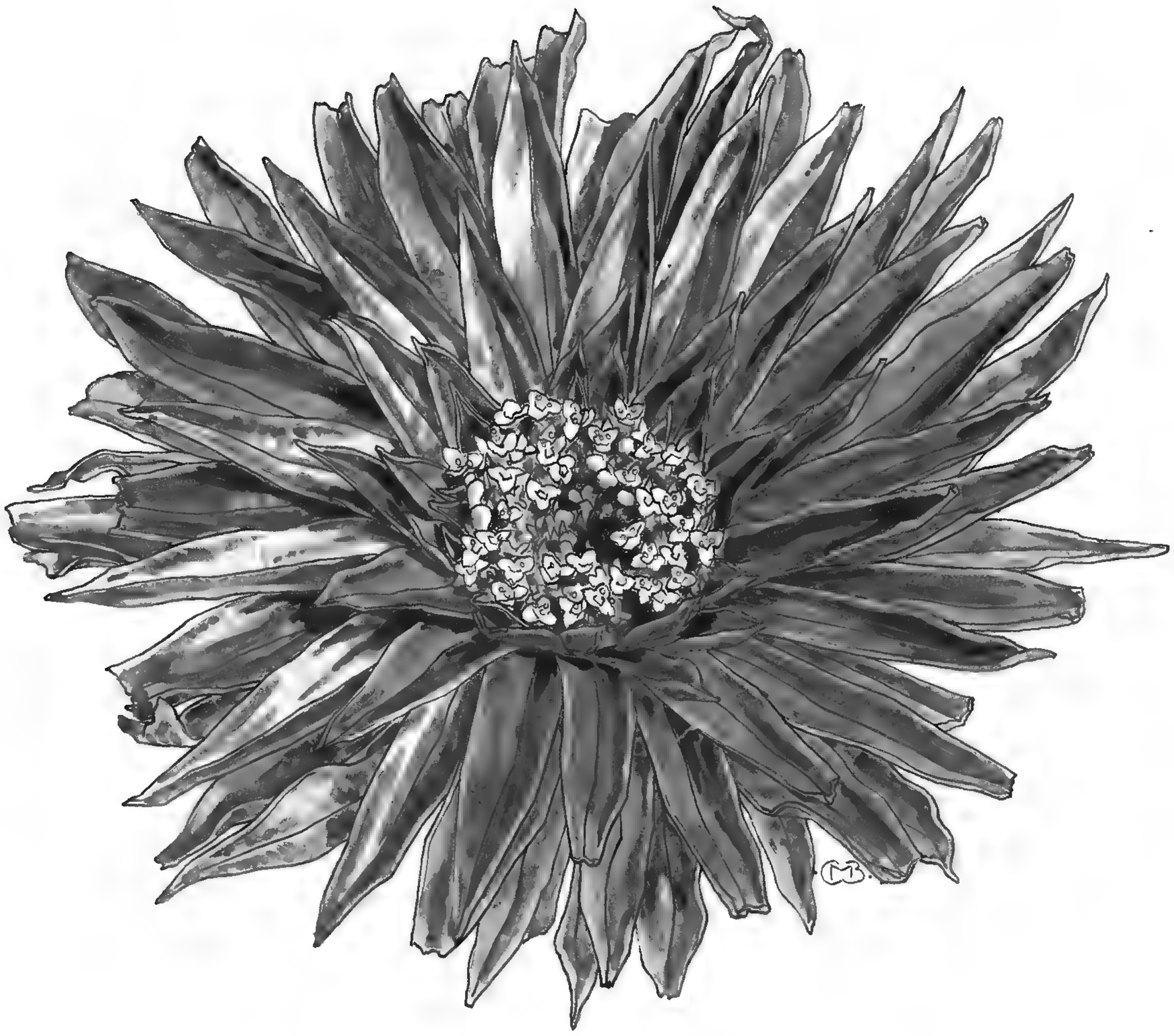
63.



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Carmel Valley, Calif.

Werneria nubigena
(Compositae)

DG
28



Valeriana rigida (Valerianaceae)

(M) (C) MBP

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Valeriana rigida
(Valerianaceae)

DG
29
209.



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Carmel Valley
Calif.
©

DG
30

Gentiana foliosa
(Gentianaceae)


CB

Genus - Pachystima and Rhus - Family -

Leaves ... Flowers Blue ... their color yellow white lavender-pink margins.

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Mary Barnus Pomeroy
88 Boronda Rd.
Carmel Valley, Cal. 93924

DG 31

Gentiana corymbosa ?
(Gentianaceae)

2 c.



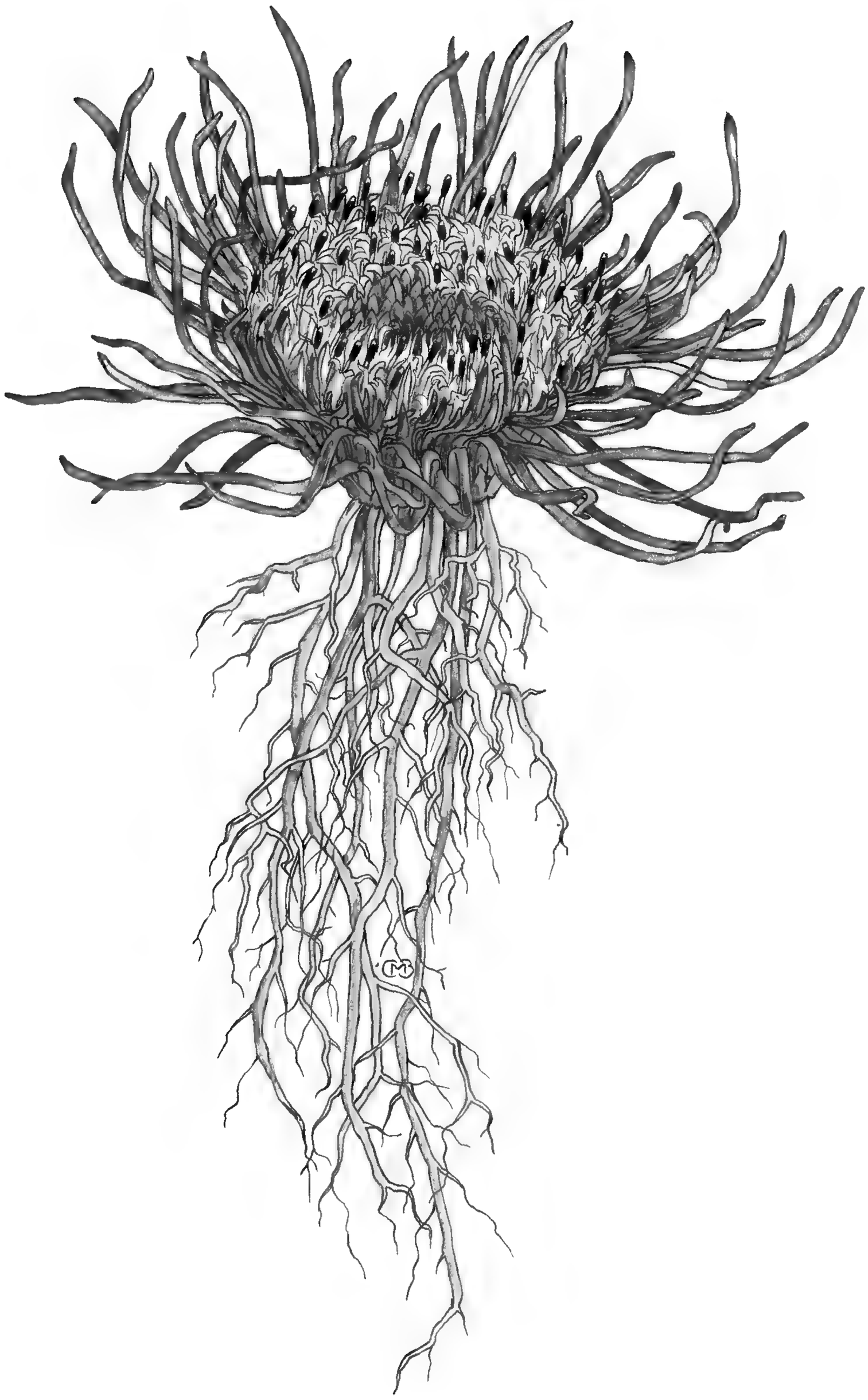
(MB) (C) MBP.

Mary Barnas Pomeroy
Carmel Valley 88 Beronda
Calif. 93924 Rd.

DG

a Arquitecta
Calcitium uniflorum (32)
(Compositae)

59



° [illegible] de Cajas (Cordillera occidental, Prov. [illegible]
at 4200 m, in [illegible]. [illegible]

Mary Barnas Pomeroy
88 Boronda Road
Carmel Valley, Calif. 93924

DG

(MB(C) MBP.

Lysipomia laciniata ? 33
(Campanulaceae)

[illegible]

62



Bomarea glaucescens (Amaryllidaceae)

MB. © 1973
Mary Barnas Pomeroy
88 Boronda Rd.
Carmel Valley - Cal. 93924

Bomarea glaucescens
(Amaryllidaceae)

DG
34

57.



DE

35

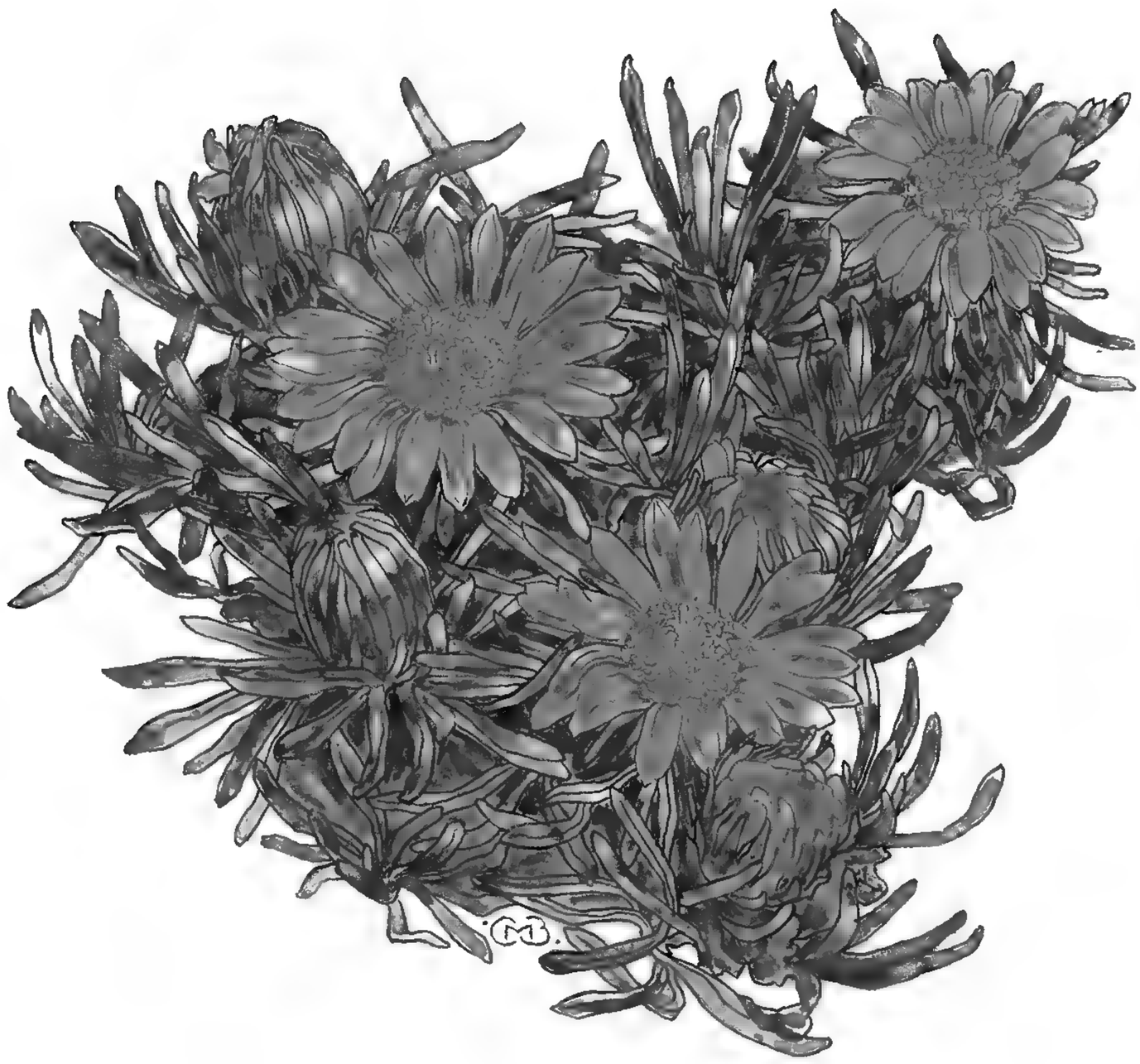
(M). (C) MBP.

(Catharina Maria Barnas)

Mary Barnas Pomeroy
98 Bromide Rd. - Carmel Valley, Calif 93924

Nototriche Pichinchense
(Malvaceae)

207.



- Stream-Pinus - ca 43. - 4500 m. Arenal
  Near crater rim. Sept. 11.
- Forms small cushions or rounded clumps with
  many blooms.

Mary Barnas Pomeroy
88 Boronda Rd.
Carmel Valley, Cal. 93924

Wernería pumila HBK DG
~~Senecio ?~~
(Compositae) 36

212.



Culcitium nivale (Compositae)

DG

37

(C)

Catharina Maria Barnas
Mary Barnas Pomeroy
88 Baronda Rd. - Carmel Valley, Calif.

Arquitecta
Culcitium nivale.
(Compositae)



©

(MB) Mary Barnas Pomeroy MBP
88 Boronda Road
Carmel Valley, Calif. 93924

(Gentianaceae) DG (38)
Gentiana rupicola



DG
39

Gentiana cerina

Mary Barnas Pomeroy
33 Bonanza Rd. - Carmel Valley,
Calif 93924



©
MB Mary Barnas Pomeroy MBP
88 Boronda Road
Carmel Valley, Calif. 93924

DG 40

Gentianaceae

Gentiana affinis



Mary Barnes Pomeroy
88 Boronda Road
Carmel Valley, Calif. 93924

DG
41

Chapter 6 (DG):

PLANT DESCRIPTIONS

DG *1 - Lantana rugulosa* - Santa Lucía - aya-rosa - rosa del muerto - *VERBENACEAE* - VERVAIN FAMILY

This common shrub along roadsides and in canyons (quebradas) around Quito may be found blooming and fruiting ± year-round. Its pale-green, grooved stem has short hairs, and is woody below. Its opposite leaves are rough because of short-hairyness and deeply-set, intricate venations. The five-lobed, ± two-lipped corollas are pink-lavender with pale-yellow throats. Those on the ± half-globe-shaped floral head's outer circle turn a deeper magenta.

The fruits - as do the blooms - cluster in each bract-surrounded head; they change from green to rose-violet shiny berries. The plant has a marjoram-like scent. Various hybrids of this lantana are now favored drought-resistant garden shrubs.

DG *2 - Achyrophorus quitensis* - Quito Chicory - *ASTERACEAE* - *COMPOSITAE* - SUNFLOWER FAMILY

The Chicory of Quito was in Hilario's days a typical wildflower of that city's surroundings. The then numerous open meadows often appeared to be showered with its hundreds of silver-white, multi-rayed starflowers, flat on the ground. Each one springs from a leaf-rosette of slender, pointed, somewhat tooth-margined leaves with reddish central veins. An enormous tap-root secures each leaf-and-flower-star to the earth.

Of course we quickly recognize that here is a member of the huge Sunflower Family, a relative of the European-American genus *Chicorium* whose root was ground up and used in place of coffee, during war time in France and Germany and which is still used as

special flavoring in coffee.

DG *3 - Duranta triacantha* - chivo-caspi - casha mote - *VERBENACEAE* - VERVAIN FAMILY

Year-round, this dense shrub used to flower all over Quito's grassy plains, on slopes and in canyons. Being showy and armed with spines, it should resist man's destructive tendencies, as he clears ground for building homes. On the sturdier branches, usually three small leaves along with one spine oppose another such set. Younger branchlets may bear groups of just the three leaves without spines and without a like group opposite. The leaves are small, ± flat-fig-shaped, dark-glossy-green above, paler underneath.

The trumpet-shaped corollas have one of their five spreading lobes more crisped than the others. These lavender, white-centered blossoms with tiny throats contain four cream-colored stamens and below them a short green style. They emit a lilac-like fragrance. They are clustered on the top of branchlets. Dirty-green to ochre berries complete the reproductive cycle as well as the bush's harmonious color scheme.

DG *4 - Calceolaria hyssopifolia* - bolsitas - *SCROPHULARIACEAE* - FIGWORT FAMILY

The month of May is normally the peak flowering time for these pouch-shaped flowers-(bolsitas)- around Quito. They prefer moist, shady slopes, often forming part of the rich-blooming vegetation of quebradas up to ± 3000m. But they may be found in bloom

practically year-round.

Their slender round stems tend to be maroon to purplish; greenish toward the top of each short branchlet bearing a flower cluster. The lance-shaped leaves are slender and come in pairs (opposite arrangement) and so do the branches. Each flower sits on a graceful pedicel with four-petaled spreading calyx.

It doesn't take too wild an imagination to compare each puffy blossom to a tiny, soft-lemon-yellow silken boxing-glove, baby-booty or pouch that opens because of a hummingbird's touch or an insect's weight. Two stamens and and two fused styles looking like one, hide within. Strong perfume - less delicious than that of others of the many calceolaria species - is part of the attraction.

DG *5 - Calceolaria crenata* - zapatitos - Slipper Flowers -

SCROPHULARIACEAE - FIGWORT FAMILY

Of all *Calceolaria* species, this is the most widespread one in Quito's environs. From Guápulo's level it climbs toward Cruz Loma, covering wide expanses with the intense lemon-yellow of its abundant flower clusters. It starts to bloom early in February, continuing for long periods.

The stem is generally more robust than that of the previous DG (4), more richly branched, and it is hairy. The pedicels form and branch without the presence of an upper leaf-pair. The branch-pairs, however, rise from pairs of broad, richly-sculptured leaves with down-turned, strong serrations.

The small shoe - zapatito - of this slipper flower is flattened

on the bottom or lower lip, while the upper forms what looks like the top border of a real slipper. In this genus, Nature has indeed created delightful, imaginative blossoms. This one is also fragrant.

DG *6 - Castilleja stricta* - Straight Paintbrush - *SCROPHULARIACEAE* - FIGWORT FAMILY

This Indian Paintbrush is one of the ± 200 species of the genus *Castilleja* occurring in Western America. They generally are connected to the roots of other plants, thus being parasitic. *C. stricta,* as the scientific name indicates, is erect; its round, smooth, reddish stem bears closely-set, alternate, 3-lobed leaves. These are functional as red-tipped bracts already on the lower portion of the stem. Toward its top, these bracts have a broader, rounder, central lobe and two slender lateral ones - all of a fiery light-red, thus giving a flame-like appearance. They attract the insects and hummers to their inconspicuous light-yellow-green flowers.

These are beak-like, protruding from the long, pleated calyx that is deeply-cleft in front as it bends on its short pedicel. The four filaments are hair-fine and white, the anthers yellow. The single style remains like a curved hair hanging out of the calyx encasing the maturing capsule.

A common wildflower around Quito and en route to Cruz Loma.

DG *7 - Castilleja arvensis* - Field Paintbrush - *SCROPHULARIACEAE* - FIGWORT FAMILY

DG
(7) Another flamboyant paintbrush - like the previous, perfectly erect and without branches. 'Indian Paintbrush' is here a name well given - in truly Indian country, where Nature's rich red colors the plant's apex as if dipped in crimson paint.

The bracts as well as the leaves, set alternating up the stem, are simple, 3-parallel-nerved, trough-shaped blades - dull-brownish-green. In the axil of each sits a simple, short, ± 'round-belly-bottle-shaped' flower. This is purplish below, green above, and short-hairy. Inconspicuous.

May this delightful bright species remain common around Quito!

DG *8* - *Alonsoa lactea* - caritas blancas - Little White Faces -

SCROPHULARIACEAE - FIGWORT FAMILY

Here we have one of the Figwort (or Snapdragon) Family's fantastic blossom shapes. Each flower resembles a tiny face (red-green design around four closely-set, yellow, downward-curving stamens with down-reaching pistil) fitted with a broad-brimmed white bonnet. Its lower lobe bends backward, while the upper part, especially the two lateral lobes, come forward. The broad upper lobe tilts backward only by bright sunshine. During rain, however, it inclines to form a sheltering roof for the reproductive parts.

This plant has sturdy, light-green, angular stems with alternate leaves. The latter are broader near their base and terminate in a sharp point. They are many-veined and tooth-margined; At the top, they are replaced by simple bracts.

From each such axil springs a slender, twisted pedicel -

gooseneck-fashion. The fruits resemble miniature chili peppers, and the plants emit an odor to match.

Found around Quito, on Cruz Loma's skirts, and also flourishing beyond Papallacta toward Guacamayo, along the wayside. Faithful little companions!

DG *9* - *Alonsoa meridionalis* - caritas rojas - Little Red Faces - *SCROPHULARIACEAE* - FIGWORT FAMILY

A lovely bright brick-red identifies the Little Red Faces' blossoms. Around the four forward-curving yellow stamens and green ovary and style, the coloring is a deep crimson with varnish gloss. All the characteristics of the plant correspond with those of the previous species: Little White Faces (8) was considered a variety of this one - *A. meridionalis* -, but is now proclaimed a genuine species.

The plant here shown has, however, opposite leaves instead of alternate ones. I couldn't say that this is typical for this kind - (most *SCROPH'S* have alternate ~~of~~ or whorled leaf arrangements). It may be just an abnormality. These leaves are distinctly simpler, closer-veined and have finer and more numerous teeth along their margins than those of the white-bloomed species. The small 'chilis' here have a reddish touch.

Both species grow in the same localities.

DG *10* - *Cavendishia gilgiana* - colca - *ERICACEAE* - HEATH FAMILY

Full bloom of this typical shrub can be at its showiest in

Jan.,right after the Ecuadorean highlands' Indian Summer or 'veranillo del niño' (the Christ Child's Summer - Christmas). Even in the six-month-dry-season it continues to flower. Its dense shrubbery thrives in quebradas, and on very steep slopes of the Mt.Pichincha & Quito areas. Because of its shiny bright-red leaf-shoots and glossy-crimson, long floral tubes within translucent rose-colored bract clusters, it looks as if ascended from the jungles of lower elevations.

Its round stems and branches are green to shiny-deep-maroon; the leaf stalks short, reddish; the leaves oval with sharp point. The latter have five longitudinal ribs with far-spaced connecting veins. The upper surface is shiny-green, the reverse mat-bluish-green, pin-dotted with brown.

Ten short, flat filaments with long, thin, orange, double anthers, are fixed inside the corolla base. Each blossom looks like an inverted flower vase (the floral cluster nods)- slightly constricted at the top and flaring into five creamy tips. The berries on their 1-1.5 cm long robust pedicels are flattened, dark and finely crisped. The long, elegantly curved style persists in the early fruiting stage of each.

DG *11 - Lamouruxia virgata - SCROPHULARIACEAE* - FIGWORT FAMILY

This snapdragon-like wildflower was common around Quito and on Pichincha's skirt and - hopefully - still is. It chooses to grow companioned by shrubs of all kinds, especially in quebradas. Its stem that may or may not be branched, is tan to purplish, round

and tough. At its base is the fine, dense foliage, consisting of opposite leaf-stalks that are closely set with criss-cross-opposite small lance-shaped leaflets. Above comes the long floral spike with neat flower pairs facing upward in one direction, and above, the less developed ones and tiny buds still awaiting their full bloom and fruiting; the latter already takes place on the lower portion of the spike. Each blossom is subtended by a slender, curvacious bract.

The light-green calyx has four long, darker-green sepals. It sits on a vey short pedicel and swells with the maturing, ± egg-shaped capsule on which the hair-fine style tends to persist. The long floral tubes are bright magenta and have a broad, semi-open upper lip that looks 'snout-shaped' in bud. The lower lip recurves with three lobes. The stamens, surrounded by creamy 'beards',appear just below the green stigma, in the upper lip's curve.

DG *12 - Oenothera tarquensis - ONAGRACEAE* - EVENING-PRIMROSE FAMILY

On the way to Cruz Loma, this attractive small evening-primrose occurs in numerous spreads, even up to the first bunches of páramo-grass. Likewise, along the roadside near Papallacta bordering the montane forest, all the way to Guacamayo.

The small plant's tap-root sprouts a rosette of soft-green ovate leaves with pale central vein. Several rose-red flowering stems spread in various directions. close to the ground. Their whorled leaves have slightly criper margines than the basals.

Near the apex where the blossoms appear, the stems are short-hairy. Each four-petaled flower is a little miracle of color and design in orange-red with deep-red-branched nerves and yellow margins; inside the golden stamens, outside the four pointed, half-green, half-rosy sepals turned back. Each fruit is four-edged, ± club-shaped, sitting in its leaf axil.

DG *13 - Ranunculus bonplandianus* - Páramo Buttercup - *RANUNCULACEAE* - BUTTERCUP FAMILY

Starting at the top of the Pichincha-Waterfall, this Andes buttercup cimbs to and abounds in the páramo (moorlands) of Cruz Loma and Rucu Pichincha. The often long flowering stem tends to trail somewhat before it ascends. It is reddish at the base, green above; round to grooved, hollow and hairy. The lower leaves have long stalks and three segments each. These are again variously lobed and irregularly serrate. The singly-placed upper leaves are ± stemless, very simple, somewhat clasping and bract-like.

The flowers with their five down-turned sepals which are hairy on their invisible outside, bear 12-14 elongate petals of bright-glossy-yellow; their outside has a silken sheen. The yellow stamens and green pistils are numerous. A rounded head of seedlike achenes remains after the other flower parts fall away. We found it blooming the end of March 1945.

DG *14 - Senecio pimpinellaefolius* - sp.of Groundsel or Ragwort - *ASTERACEAE (COMPOSITAE)* - SUNFFLOWER FAMILY

DG
(14) *Senecio* being one of the largest genera not only of the Sunflower Family, but of all flowering plants, it is appropriate that o n e $species should be in this collection. The scientific name comes from 'senex'= 'old man' and refers to the white pappus (bristles) of the seeds.

It is an elegant flower with the large, flat, yolk-yellow composite head swaying singly on its stem. The latter bears irregularly placed slender bracts - set closer together near the involucre of red-tipped bracts. The floral head has a center of orange disk-flowers surrounded by numerous slender rays that taper into 2-3 finest tips.

The leaves are strictly basal - not too many. They are crimson just above the ground, then curve outward as thin, gutter-shaped stalks, displaying row after row of decorative, widely-serrate lobes of rich-yellow-green.

It grows near Quito as well as high in the moorland (páramo). We founnd it also near Papallacta and Chalpi. Blooming season may be Jan - May - Nov or Dec; probably year-round with favorable weather conditions.

DG *15 - Brachyotum ledifolium - MELASTOMATACEAE* - DISSOTIS & MEDINILLA

A shrub of striking appeal, this representative of the above common Ecuadorean plant family - largely of tropical species - is a must. It characterizes higher elevations up Mt.Pichincha; also the Papallacta area and others: rough to short-hairy, tan branchlets, small dark-green leaves, multitudes of nodding dull-

red lampshade-like calyces with luminous pale-yellow-green rotate petals comprise its intricate make-up. It's good to see it photographically portrayed in the colorful book parque national - SANGAY by J.Anhalzer. May it continue to grace many wild places of the high Andes!

Each 'lampshade's five delicate petals twist to the right - when considered as a flower facing up. Within, there are ten pale-green filaments with long, creamy anthers. The inferior ovary has five parts and one style.

Typical for this family's genera's and species' leaves are the three parallel ribs that are evenly connected by numerous cross veins. In this species, the dark-green upper surface is brown-hairy; the reverse, pale-green with denser hairyness on the three prominent yellowish ribs.

DG *16 - Berberis rigidifolia* - carrasquillo - Barberry sp.-

BERBERIDACEAE - BARBERRY FAMILY

The genus *Berberis* (an Arabic name) has over 200 subspecies. It occurs in North and South America, North Africa and Eurasia and is widely cultivated for gardens.

This species was common around Quito and on Pichincha's skirts. It blooms from Jan-March as well as later in the year. It is an evergreen shrub with mostly horizontal branches. The small, dark-green leaves have shiny upper sides and are grouped 5,7 or 9 together with three spines. Each ± fig-shaped leaf (its reverse side being pale and net-structured) ends in a prickle. Older leaves may have a tooth or two on the sides. Young leaf-shoots

tend to be red.

The small flowers hang like bunches of grapes in honey-scented profusion. Each blossom consists of six lemon-yellow sepals, six yolk-yellow petals which are arranged in sets of threes with a pair of glands at their base; they curve over the six stamens and the flat, green stigma on the superior ovary. These individual blossoms suggest miniature pond-lilies. The fruits are small blue berries.

DG *17 - Barnadesia berberoides - ASTERACEAE* - SUNFLOWER FAMILY

Due to the similarity of this shrub's leaves to those of the barberry just described (16), it bears its specific name - *berberoides*. A closer look reveals the difference: the softer-greeen color, though polished-looking, of their upper surface. Long spines - yes, but in pairs instead of threes.

Of course, the flowe-r-head says "thistle", or for sure "composite" (Sunflower Family). This bush loves to grow in dense abundance amongst other shrubs in quebradas or on hillsides. La Floresta de Quito and Pichincha hosted it. Its often long, arching branches with pendant flower-heads make an elegant silhouette.

There are usually 13 pink ray-flowers in a head; each terminating in four fine tips, and their outside is set with silky-white hairs; where their tubes open into rays, each bears one pink hair.Their filaments are brown, the pollen is grayish, the styles are pink and their stigmas open as two broad dark-

rimmed lobes - rose-purple on the outside. The pappus (?) is yellow. (May need expert checking! The pink bristle could be of sterile rays, while all the rest pertains to disk-flowers?)

The long, slender involucre with its staggered, narrow, tannish bracts which end in fine prickles, hold all these exquisite features.

DG *18 - Liabum scandens - ASTERACEAE* - SUNFLOWER FAMILY

The huge Sunflower Family with its ± 1100 genera and world-wide distribution, has many laymen and botanists baffled. Here is another one of the innumerable 'yellow composites' challenging us. Shrub-like, it inhabits quebradas along with all the dense flowering vegetation.

Its robust stems are angular or grooved, completely covered with dirty-white fuzz. The nickel-to-quarter-size deep-gold flower-heads form veriously-branched terminal clusters, generally on long flowering stalks. The disk-flower center is orange-gold, the countless brighter-yellow slim rays form ± double tiers. The scent says,"honey". The tips of at least two rows of slim bracts composing the pot-shaped involucre, are purple-red.

Pairs of broad, deep-green leaves with 2-3 slender main ribs, strengthened by a fairly open network of veins, occur in wide intervals up the stems. These large leaves with their longish curving petioles (leaf-stalks) have a pair of circular, stem-clasping, bract-like lobes. All blades have firm little teeth set far apart along the recurving margin, and their reverse side

is all fuzzy-white. This typical plant blooms from July - Sept. around Quito and up Pichincha.

DG *19 - Bomarea caldasii quitensis - AMARYLLIDACEAE* - DAFFODIL or AMARYLLIS FAMILY

I call this gorgeous vine 'Climbing Amaryllis of Quito'. It looks like a specially dressy sub-species of *B.caldasii* - shown photographed in the recent 'parque national SANGAY' book by Anhalzer. This plant deserves a specific common name - be it English, Spanish or S.Am.Indian...

The showy orange-red bell-shaped flowers form graceful inflorescences that hang from neighboring shrubs and blooming trees. There are commonly 3-5 in each cluster, issuing on silken, pale-green pedicels from irregular green-membranous bracts. All this at the end of a long, smooth, twining stem set with alternate leaves. The latter are long-ovate, broader at the base, pointing downward from a short, flat, crisped petiole. I never ødug up the bulb (too precious, and perfect in its habitat).

Each blossom's particular charm derives from the exciting contrast created by the six green anthers inside the three longer, broader, orange perianth-segments with purplish spots; and the shorter, outer three segments (sepals), bearing a green spot at the tip of each, and proceding from the inferior green ovary. Fantastic!

It blooms year-round in Pichincha's canyons.

DG *20a-20b - Phaedranassa chloracra - AMARYLLIDACEAE* - AMARYLLIS or

DAFFODIL FAMILY

DG
(20a&b) During June-August, one can have the delight on Pichincha or lower, near Guápulo, of coming upon a sloping meadow full of the smooth erect stems of this Amaryllis-genus: *Phaedranassa*. A cluster of commonly five, but sometimes up to nine, long, pinkish-red waxy flower trumpets crown each one. These point downward from the ascending, short, shiny-dark-green pedicels (individual floral stalks) - each with an inferior ovary. They are surrounded by irregular brown bracts (the split spathe).The six slender tips of the flower segments are soft-green with paler edge and point outward. The six silky-white stamens with tannish anthers, and the longer style protrude and curve somewhat, inviting their frequent customers, the humming-birds.

A veriety with soft-yellow trumpets occurs among the rosy-salmon-blooming ones - just sparingly here or there. Its corollas may be totally soft-lemon-yellow or have slightly salmony streaks. But always, the tips are soft-green with lighter margins.The tall stem's color is more yellow-green rather than bluish-green.

The leaves appear in Nov-Dec, mostly one or two from each bulb; they are like long pointed tongues with narrow base, and are sharply-creased by the central nerve. They are velvety, bluish-green, 18-25cm tall, 2.5 - 5cm broad (widest part). It is hard to define if the flowering stem is first or the leaves?

DG *21 - Stenomesson aurantiacum* - campanitas de fuego - Fire Bells -

AMARYLLIDACEAE - DAFFODIL or AMARYLLIS FAMILY

DG
(21) Here is a member of the closely-related genus in the Amaryllis Family: *Stenomesson.* The sspecific name '*aurantiacum*'=golden - is descriptive, but not as accurate as Hilario's above definition: campanitas de fuego or Fire Bells. Indeed, their coloring is that of brightest flames.

These flowers love steep dry slopes, often densely vegetated - in the Machángara Valley, Hacienda Las Monjas, Quito, Bella Vista, left slope of Pichincha Waterfall and higher up the mountain. Their naked dull-bluish-green, finely-striate stems may reach up to 5 dm if they have to stretch for light. They bloom in May-June, probably later as well. The bulb id deep underground.

The nodding flowers whose pedicels rise out of two or three shreds of the brownish spathe atop the single tall stem, tend to be less numerous than in *Phaedranassa* DG (20); they unfold in succession. Each blossom resembles a slender-handled, then widening yet not widely-flaring, bright-orange bell, attached to an elongate, 3-sectioned, shiny-green knot (the ovary). The yellow anthers on their thin, white filaments and the thin reddish style with its yellow-gray stigma do not protrude notably. The slender leaves appear later (or earlier) in the season, never during blooming-time.

DG *22 - Phrygilanthus pycnanthus - Tristerix longebracteatus* (new name or different species?) - popa - *LORANTHACEAE* - MISTLETOE FAM

This amazing semi-parasite that needs to extract minerals from shrubs or trees, grows at the lower moister fringes of the

páramos (moorlands). It makes its own chlorophyll. We found it blooming in Aug-Oct, ± half-way up Cruz Loma, atop various tree-like host-plants; in the draw toward Condor Guachi; near Lloa on the way to Guagua Pichincha. It seems to be prolific, therefore common: birds spread it by cleaning their beaks of the seeds' stickiness, thus planting them into the host bark. Also by their droppings that are every bit as adhesive.

The leaves of this beautiful 'invader' are crowded in ± opposite pattern but all pointing downward; they have very short petioles, are leathery, dull-shiny-green with ± crisped surface, and yellowish, wavy margins. The flowers too are densely clustered and pointing down at the end of each woody twig. The individual corolla's pot-shaped calyx is 6mm long,5mm broad, light-green with orange-yellowish 5-tipped margin. Its pedicel is a few mm long, thick and bearing a slender green bract alongside the floral tube. This is very long, thin, curving - orange-yellow, terminating in five scoop-like, red petals. When opened, they recurve and look very thin. The five anthers are dark red. The long yellow-orange style turns fiery-red below the crimson stigma. It persists when the other floral parts fall off.

DG *23 - Gentiana swertioides* - genciana - Gentian - *GENTIANACEAE* - GENTIAN FAMILY

When climbing Mt.Pichincha, this high country gentian is one of the first species one encounters. Starting at the waterfall, it accompanies the observant hiker all the way into the páramo. It may also be found on the path to Condor Guachi. Blooming

season is Aug-Sept; fruiting, late Sept.

Its erect, slender, up to 4dm-tall stem is silken-pale-pinkish to greenish, showing its longitudinal ridges in gentle twists. It may branch profusely, mostly bi-laterally from each ± stem-clasping leaf pair. The floral clusters consist of one or two several-cm-long pedicels in each leaf-axil - four per pair.

The 5-petaled lavender blooms are relatively small - ± nickel-size when wide open. The flower tube is very short, the style blue, stigma 2-lobed, and the five purple filaments have yellow anthers. A white-lavender silky beard surrounds the stamens' base. The petals are more intense pinkish-violet toward their tips. The green-violet calyx is small, irregular, with five delicate sepals. The floral stems lengthen as the capsules mature to 2cm length.

King Gentius of Illyria presumably discovered medicinal merits in the roots and bitter juices of some Gentian species.Therefore, these exquisite flowers honor his name.

DG *24 - Siphocampylus giganteus* - Giant Lobelia - *CAMPANULACEAE* - BELLFLOWER or BLUEBELL FAMILY

Because this species was formerly called *Lobelia gigantea*, 'Giant Lobelia' would be an excellent name. Its flower shape in a measure suggests 'Lobelia', and many genera with related characteristics - having long sweeping or curving corolla tubes - are numerous in Ecuador, particularly in its jungles. Yet now, they all belong to the Bellflowers - the type genus of which is *Campanula* or Bluebell - of radial symmetry.

Not only the blossoms of *S.giganteus* are impressive, but so is its stature: it is a tree of up to 2-4m which rises, often in groups, above the mountain brush. Each trunk spreads an untidy bunch of large yet narrow, densely-venated leaves with very short petioles and felty-white reverse sides, plus a 'fountain' of pale-felty floral stems with their long creamy corollas like curving hands. Of the flower's five lobes, the three lower barely separate; from between the upper two, the stamen-column stretches foreward with the fused, bearded anthers, and at last the two stigmas protrude at the very tip.

Each felty, red-warty, globose calyx has five graceful, long, green sepals. The flower's odor reminds of that of small carnivors. The stem contains pungent milky juice. Is all this a protective measure - attration or repellent?

This remarkable tree-plant is distributed throughout the cordillera from 3200-3600m - the beginning of the moorlands. We found it blooming on Pichincha in July-Oct.

DG *25a&b - Gentiana sedifolia* - genciana celeste - *GENTIANACEAE* -

GENTIAN FAMILY

Here is a miniature among the gentians: its fine,bluish-green-silky foliage forms almohadillas (cushions) among the other numerous wildflowers that grow in mats or clumps between the sheltering páramo-grass tufts.

The ten-pointed, cerulean-blue flowers have a light-yellow throat sprinkled with pinpoint dots. The corolla's five longer points are yellow or green on the outside; when it closes, it folds the five small points like an origami paper pattern so that they are hidden inside the larger ones - only the five pale-blue margins remaining to accent the 'twist to the right'(seen from the outside) of the 'Gentian tribe'.In these dense leaf-pillows, the calyces with their five tightly fitting linear sepals, suggestive of candle holders, are rarely seen.

Quick closing of these practically stemless delicate blossoms occurs whenever winds get too boisterous and cold. But to see them wide-open to the sun, gives a picture as of sky-blue, golden-hearted stars appliquéed on round pillows. Get to your knees and marvel for a long time!

The white variety grows in the same locations, forming its own almohadillas: on Cruz Loma, Rucu Pichincha, Paso de Papallacta, and in other moorlands. Found blooming in July-Sept.

DG *26 - Halenia weddelliana* - cacho de venado - *GENTIANACEAE* -

GENTIAN FAMILY

A form reminescent of a columbine, although of four parts

rather than five, is represented by the genus *Halenia*; the Gentian Family has given us a surprise. Its Spanish common name aptly describes the shape of the individual blossoms; indeed they resemble small deer heads with simple yellow antlers. The four sepals are soft-green and the four petals have smooth yellow horns protruding backward from between the sepals. The petals have greenish-yellow tips which remain close together.

These unique corollas are clustered atop the main floral stem. They reach in various directions from elegantly-twisting pedicels. This main stem has longitudinal ridges and bears one or two far-spaced pairs of sessile leaves, maybe with some 'deer heads'. At its base, it is surrounded by a number of ascending, broad-lance-shaped leaves. All the leaves have smooth, light margins.

Found on Cruz Loma all through the glacial valley skirting Rucu Pichincha. Only once, we found it in Quito, above Guápulo; These plants were taller and branching. A related species is *H. gracilis* from Papallacta: it is loaded with rich yellow blossoms.

DG *27 - Werneria humilis* - Pillow-Werneria - *ASTERACEAE* - SUNFLOWER FAMILY

Exclusively a páramo-dweller, this composite species indeed characterizes the moorland of Mt.Pichincha; its large, domed mounds or pillows form solid islands among other smaller plants and the tall páramo-grass tufts. Inviting though they look, sitting down on them is uncomfortable, because their small, densely-set leaves are hard and sharp-tipped. The latter form

innumerable clusters, each crowned with a flat composite flower-head. The individual one has 10-13 slender white rays, framing the rosy center of disk-flower buds, which gradually open to expose their yellow inside parts.

To see one such huge or smaller pillow in full bloom is like viewing someone's floral embroidery - Mother Nature's. Who can rival it? Not all these cushions bloom at the same time, so that many are yet solid green. We found this so in July and August.

DG *28 - Werneria nubigena - ASTERACEAE* - SUNFLOWER FAMILY

On both Rucu and Guagua Pichincha, this *Werneria* species spreads its large daisy-flower-heads flat upon the ground, based by its long, often purplish-tipped, strap-shaped leaves. These are soft-bluish-green. They are packaged (± eight) flat against each other, opening up almost fan-like in two directions, right from their root-stock. Always just one single composite head blooms amid its leaf-set; yet the plants grow in cozy groups.

± 22 white ray-flowers crowd around the yellow disk-flower center of each 'daisy' head, suggesting to the hungry explorer a delicious 'sunnyside-up'fried egg. Sometimes, the white rays are rosy or purple on the reverse side. Of course the receptacle holding each flat daisy is invisible because ± stemless. Upon scrutiny, it is broad and light-green at its base, showing a whitish-wooly covering, and the numerous darker-green, fringe-like bracts of the involucre.

This is a typical páramo species, blooming from July-Sept.

DG *29 - Valeriana rigida - VALERIANACEAE* - VALERIAN FAMILY

Low-growing habits being ideal for survival in the High-Andean climate, this valerian has designed itself a multi-rayed leaf-rosette flat on the ground. Its invisible part is a formidable root-stock anchored deep in the soil. It emits the strong valerian odor - Baldrian - German cats go crazy over.(American cats seem to delight most in their special catnip - *Nepeta cataria* , Mint Family -, eating or rolling in its leaves).

The rosette consists of circles of stiff, leathery, lance-shaped leaves, the longer ones outside hugging the ground, the smaller ones inside - smaller and smaller - their tips sharper, on and on, until the shortest inner ones contain the multitude of tiny florets, as if in a cozy nest. The flower tubes have three pointed lobes - white inside, pink outside - with three yellow stamens. In young plants, the waiting buds form the depressed pink center which lends emphasis to this terrestrial star.

These gorgeous rosettes are deep-green, which appears bluish because of their 'high finish' which reflects the sky. They grow singly or in groups on both Pichinchas and in all páramos (4000-4300m), blooming in Aug-Sept. According to Linnaeus, the name honors the Roman Emperor Valerian!

DG *30 - Gentiana foliosa* - genciana - *GENTIANACEAE* - GENTIAN FAMILY

A large stand of this sturdy gentian in full bloom can mean an

alpine botanist's dream come true - likely from July-Sept. This species thrives in the sweeping moist glacial valley of Rucu Pichincha and at the foot of its crags.

The erect round main stem is greenish-brown - bronze-like. Its ± stem-clasping leaf-pairs alternate in direction. The prominent central leaf-rib remains pale-green while deep-red-purple striations tint the reverse side of these leaves. Those close to the main flower cluster are broader and 3-5-veined. All floral stems and branches arise from the leaf axils.

Five dark-red sepals finish the ascending bell-shaped, metallic-green calyx of each blossom. The five oval petals protrude high above it; They unfurl from a rosy-lavender, rotate bud to a bowl- or saucer-shaped inviting blossom. Fine lilac nerves streak the petals' lighter inside as well as the darker outside. The ovary with two-lobed stigma is whitish-lemon-greenish. The five brown anthers on white filaments surround it.

(Check with #41 in this chapter; it bears the same name).

DG *31 - Gentiana corymbosa (?) - GENTIANACEAE* - GENTIAN FAMILY

DG

Beside *G.foliosa* (#30), this species is a dwarf! It chooses the same altitudes as the just described 'giant'- 4200-4400m; on Guagua Pichincha as well as Rucu Pichincha. It was blooming and fruiting in September.

The small plants have graceful deep-brownish-purple stems, often branched at the roots, rarely above. But under the shelter of páramo grass tufts, they grow more robust, branching

profusely. The pairs of small, roundish-oval, shiny leaves are olive-green with purple parallel-venation; they criss-cross direction and are fairly closely arranged.

Close-up, the small blossoms are exquisitely-patterned: seen from above, a closed bud (twisted to the right) reveals a violet-rose 'scribble' on the right upper margin of each of its five delicate petals. Their lower portions are decorated with pink venations and scattered blotches. The young anthers are blue-gray - creamy in the middle, lavender-pink along the edges. Later, they turn blackish-brown. Yellow pollen and a greenish-lemon-yellow ovary with double stigma perfect this gentian's color scheme. The flowers rarely open beyond egg- to non-flare-bell-shape. 5-10 of them form an upright cluster at the tip of each branch.

DG *32 - Culcitium uniflorum (reflexum)* - arquitecta - Architect -

ASTERACEAE - SUNFLOWER FAMILY

However its name 'Architect' came into being, this fascinating composite shows indeed an evenly arranged construction - somewhat like a building - an apartment-tower. Or does the name refer to the reconstructive medicinal qualities it is said to possess? It is impossible now to ask Hilario, but - other Andean dwellers might know... It is common in all moorlands at ± 4000-4600m; on Pichincha, it showed various stages of floral development in July-Sept.

The rarely branching sturdy stem, including the under-side of the densely-whorled, small, ± triangular leaves, are covered with

whitish fuzz, protecting the plant from the changing temperatures, the desiccating wintry cold, or heat. Plants with a developing flower-head often point their leaves downward, showing their shiny-green upper surfaces. Close to the ground, the leaves are leathery-brown. Each single leafy stem bears a single flower-head - at first resembling a creamy flat button in a setting of short, erect goldy bracts. As its countless disk-flowers open up, the head has stretched its pale-felty involucre, while the stem made a crook, thus turning it downward like a hanging lamp of golden-yellow light: again - a protective measure. The head lacks ray-flowers.

DG *33 - Lysipomia laciniata - CAMPANULACEAE* - BELLFLOWER or BLUEBELL FAMILY

Like a sea-anemone flown to the high mountain country to become terrestrial, this phantastic plant prefers wet moorland situations where the mists linger and snows are frequent. The portrayed one is from Paso de Cajas (Cordillera Occidental, Prov.del Azuay) - at 4200 m. Found on Pichincha too, growing singly. Its fine, richly-branching roots go straight downward, holding the stemless rosette flat on the ground. Its multitude of strip-thin leaf-blades range from maroon-purple to red to grayish, deep-green and blue-green - always shiny. The shorter ones are the inner ones, and all their tips curve upward.

The mass of individual florets suggests 'Composite', but botanists have placed this miraculous thing in the Bellflower Family, where our acquaintance, the Giant Lobelia (#24), also

belongs. What a contrast in stature and detail! The small flower tubes are delicate-pink-lilac and yellow-white, their upper lip 2-lobed, the lower 3-lobed. Their joint stamens are nearly black.

DG *34 - Bomarea glaucescens - AMARYLLIDACEAE* - DAFFODIL FAMILY

To come upon a group of the 'High Andes Bomarea' among the crags of Rucu Pichincha or any other lofty place, is a nature lover's special reward. On a 40-65cm-tall erect stem, beautifully enclosed in its overlapping, vertical, alternate leaves of softly-striate dull-green, hangs its upper portion with the floral cluster. On that part, the leaves open out to form a roof above the 'red treasure'- another of Nature's protective designs.

Silken red buds, and slender bell-shaped open blossoms attract the hummers who frequent highest altitudes. Each flower's inferior ovary looks like a bright-green half-spheric button from which the outer three red segments proceed. Since these do not open very wide, the three yellow inner ones peek out between them, showing lemon-yellow tips divided by deeply-molded, light-red central nerves. These yellow petals are sprinkled with black dots. The six stamens and one style are hidden within.

Found blooming in July-Aug. at ± 4500m.

DG *35 - Nototriche pichinchense - MALVACEAE* - MALLOW FAMILY

This eye-catching member of the Mallow Family is endemic to the Pichinchas. On Guagua-Pichincha it bloomed profusely just

below the snow-line at 4300-4450m. To see this exquisite flower's small and larger mats or globose little cushions so near Guagua's awesome crater, is unforgettable. Its habit consists of tree-like branching rootstocks, twisted together, each branch bearing its own leaf-clump and blossom. As a whole, a mat or cushion contains clusters of small bluish-gray-green hand-shaped leaves with many of the large flowers crowded in. Amazingly, the leaves' reverse side is shiny-green, their upper surface with a silvery 'bloom' - stellate hairs? -; their margins are rolled upward.

The stemless flowers' five green calyx lobes are wide yet pointed. The five petals are broad-scoop-like with notched, rounded top margins. They have a silken sheen to their ± streaky-crisped lavender-purple mid-section. Their delicate-green base tends to be pleated, then slim and fused with each other. The soft-green stamen-column bears many yellow anthers. Inside this, a pistil-tube extends its ± ten pistils above the anthers. Such a dressy corolla! This mallow's buds are twisted either to the right or left.

DG *36 - Werneria pumila* - Golden Werneria - *ASTERACEAE* - SUNFLOWER FAMILY

One of the highest mountain dwellers, this composite adorns otherwise barren-looking sandy areas with mats or round cushions studded with multi-rayed, flat, golden stars. The arenal below Guagua-Pichincha's crater was home to this very special species, found at 4300-4500m. Mid-Sept. is perfect for its fullest bloom.

Its short, narrow leaves grow in small bunches - each bunch eventually forming an untidy rosette around a stemless flower-head. This looks spectacular because the shiny leaves are dark-green - the bottom ones crimson or deep-maroon -,thus setting off the bright-yellow flowers.

The number of involucral bracts generally agrees with that of the 19-21 rays. These bracts are green with red-purple tips. With age, they turn solid purple. The ± 1cm-wide disk-flower-'heart' is flat to button-shaped. The ray-flowers are tongue-shaped, obtuse-tipped and rich-lemon-yellow. What a 'daisy'!

DG *37 - Culcitium nivale* - orejas de conejo? - Rabbit Ears? -

ASTERACEAE - SUNFLOWER FAMILY

On all the High Andes mountains, just below perpetual snows, this graceful *Culcitium* braves the harsh conditions of altitudes ± 4400-4700m above sea level. Our explorers found it in bud and bloom in the middle of September.

Totally clad in silver-white fur, this plant has well outfitted itself: its basal clusters of long, narrow leaves, the successively shorter ones enclosing the stem - all having in-rolled margins -, the flowering stem itself with its elegantly curving top - its broad green flowering head facing down. Every feature of this snow-dweller is graceful; only the flower-head looks a bit heavy. Fringe-like bracts base the receptacle.

Like the Architect (#32), Rabbit Ears has a single head of only disk-flowers. These are rich-yellow surrounded by green diminutive detail. Both species lend uniqueness to the High-Anden

flora, each at its chosen altitude.

DG *38 - Gentiana rupicola* - Salmon Gentian - *GENTIANACEAE* - GENTIAN FAMILY

Not far from the great glacier-bound mass of Mt.Chimborazo, the páramos of the pass to Guaranda - at ± 4300m - may present a splendid showing of mats of these salmon-colored gentians; likewise, the moorlands of Antisana and Cotopaxi.

The plants'flowering stems are reddish, short and thin, rising in close proximity from the likewise thin, creeping main stems. Each floral stem has small simple green leaves and a graceful calyx with five dark-green, pointed sepals. From these bulge forth the five rounded, high-polished, salmon-red petals in the typical gentian-twist; they usually remain half-closed, the floral stems upright. Brave, bright little gems of the High Andes.

(One July, my uncle Walter Sauer brought this specimen back from one of his geological excursions, for me to draw).

DG *39 - Gentiana cernua - GENTIANACEAE* - GENTIAN FAMILY

This gentian with its mostly closed bright-yellow-silken flowers is a gaudy little beauty: each of its five petals has a red margin on the upper right outside. When seen from above, the blossom suggests a windmill-toy because of the elegant red swirl and varnished look.Its pale-yellow inside is rarely seen.

The greenish-bronze calyces are slender with long pointed

sepals. 1-3 flowers on short pedicels sit atop each fine stem, springing from one or two leaf-pairs. The latter are broader than is the small linear foliage at the base. One root-stock produces several spreading stems, curving upward with the blooms.

Found in Aug.,Paso de Cajas, Cordillera del Occidente, Prov. del Azuay, close to the snow-line where it is very moist, at ± 4200m, forming dense mats; in Oct,,Cordillera de Chanchán at the same elevation; in late Aug.,Páramo Tilila, Prov,Chimborazo, at 3500m.

DG *40 - Gentiana diffusa - GENTIANACEAE* - GENTIAN FAMILY

Among lavender gentians, this delicately-stemmed species' showy flowers lean toward blue-purple; the five petals have purple nerve-stripes, both inside and out. From a slender base, they open wide, often turning out-and upward. the tall ovary is lavender-gray to tannish, and the delicate silky-gray filaments bear anthers that are at first turquoise.

Each stem branches freely in leaf-pair axils. The bright-green, lance-shaped leaves are ± 3-times the size of those of most mat-forming gentian species of these moorlands. The purplish-maroon, shiny floral stems reach somewhat above the cushion, thereby making room for the wide-open blossoms - like butterflies hovering and flitting with the wind.

Blooming in May, Paso de Tiopullo, between Cotopaxi and Iliniza, at ± 3200m. Also reported from 3600m on Pichincha, flowering and fruiting in August.

DG *41 - Gentiana foliosa ? - GENTIANACEAE* - GENTIAN FAMILY

Several botanists have felt that this must be *G.foliosa*. It was found between 4000 and 4400m on Guagua Pichincha, flowering profusely in Sept.1945. Compared with #30 by the same name, it is squatty instead of tall; its olive-green, outward-curving leaves are crowded, so as barely showing the stem. The lower leaves tend to be yellowish-red. Some plants reached ±20cm in height; each stem bore 12-20 buds and open flowers. These are bowl-shaped with roundish petals - whitish-lavender inside, richer pink-lavender outside with rosy touch where the petals' overlapping in bud ended. The corolla's lower portion is silken-lemon-yellow-green. Lovely purplish-pink nerves trace the petals. The reddish points of the five calyx-lobes are placed in between the open petals. The ovary with its double stigma is soft-lemon-greenish. The five white filaments bear gray anthers that open up dark-brown with reddish-yellow margins.

Just one more spectacular gentian celebrating the frigid High-Andean solitude - yet under the equatorial sun when the clouds are lifting...

Appendix

Appendix

ILLUSTRATIONS

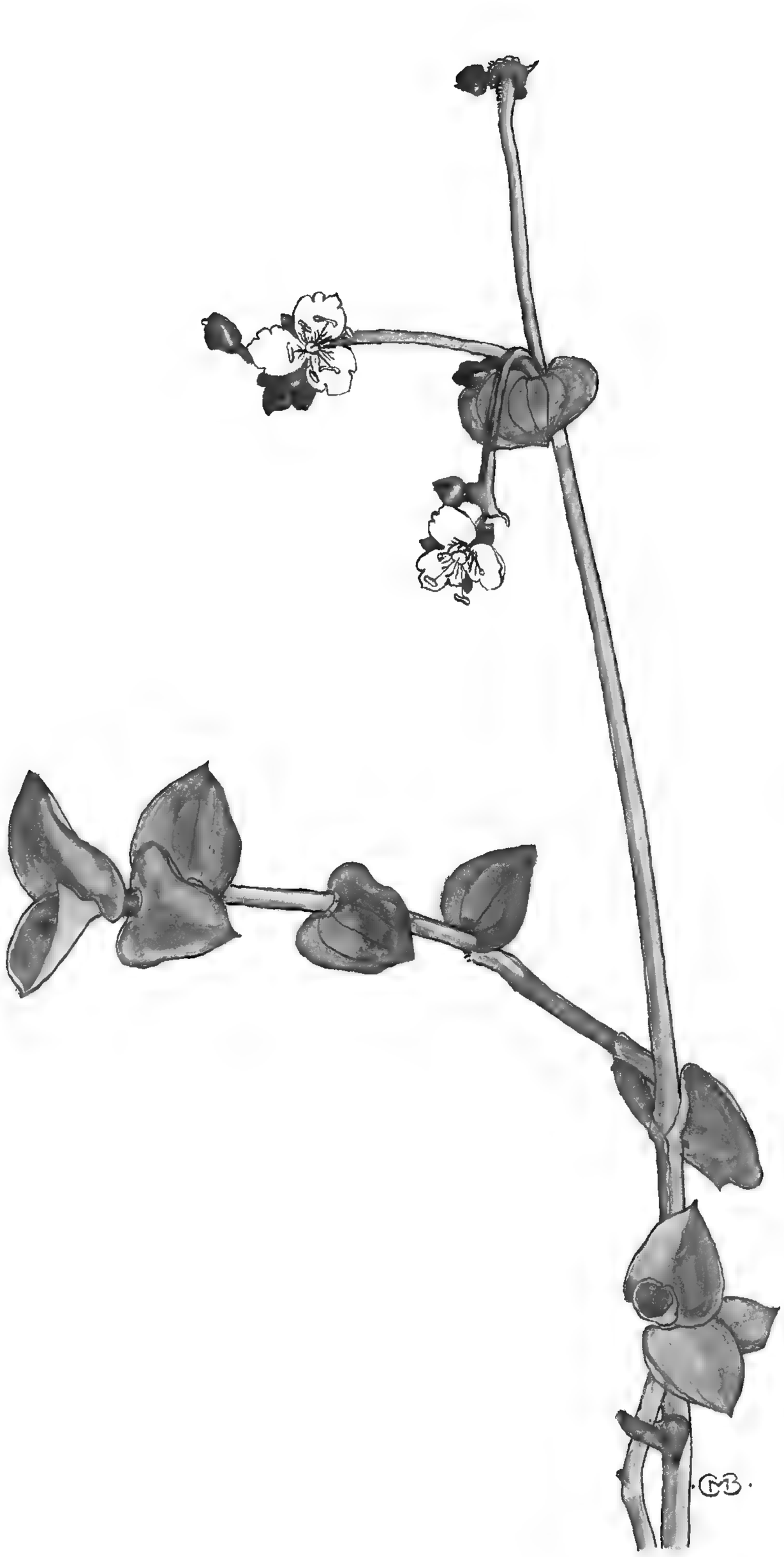






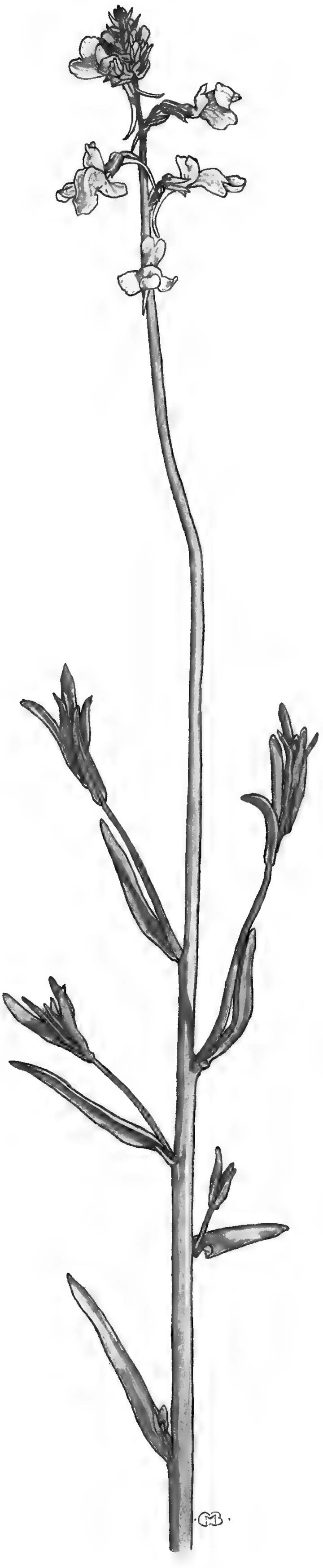



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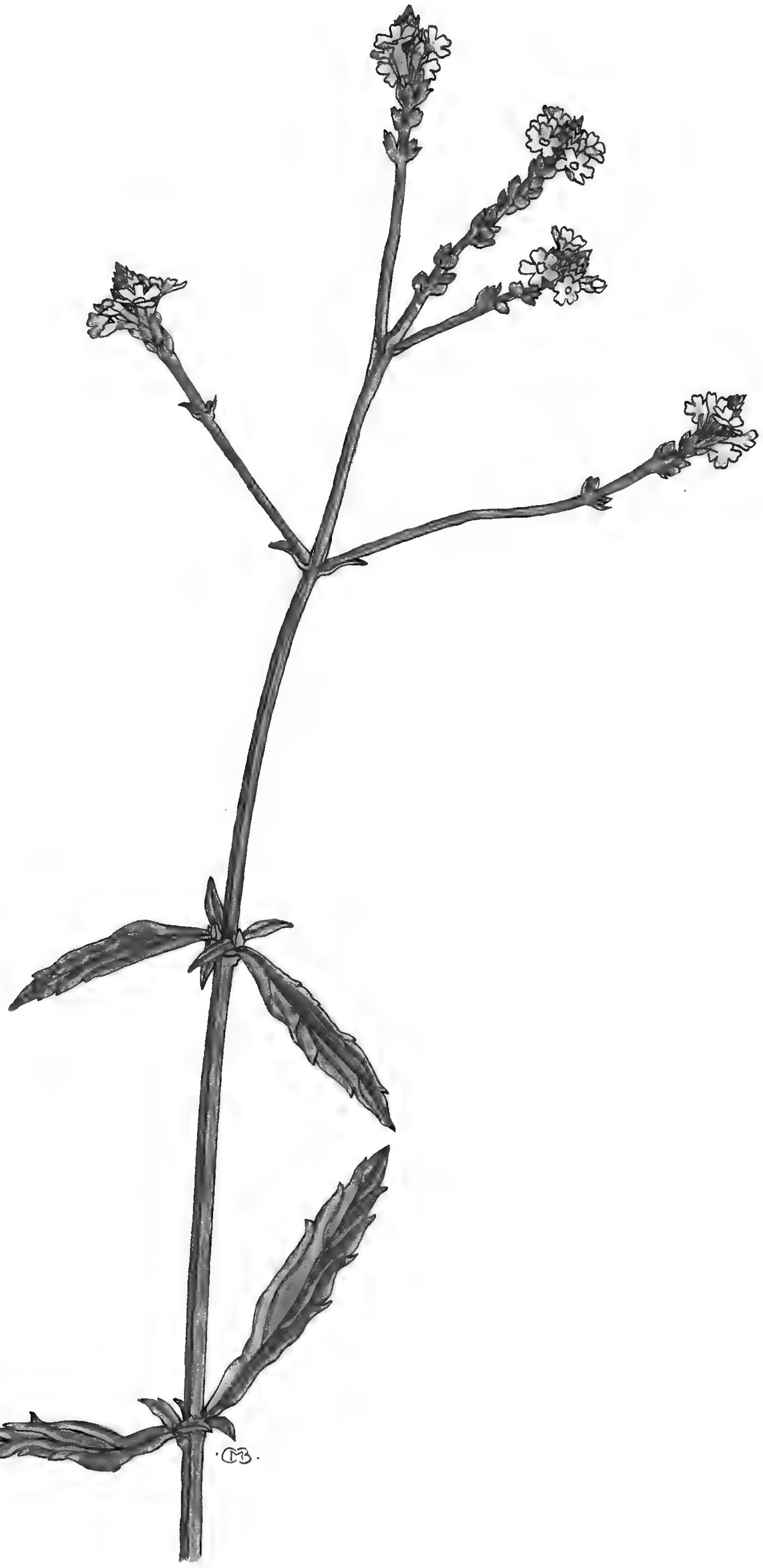




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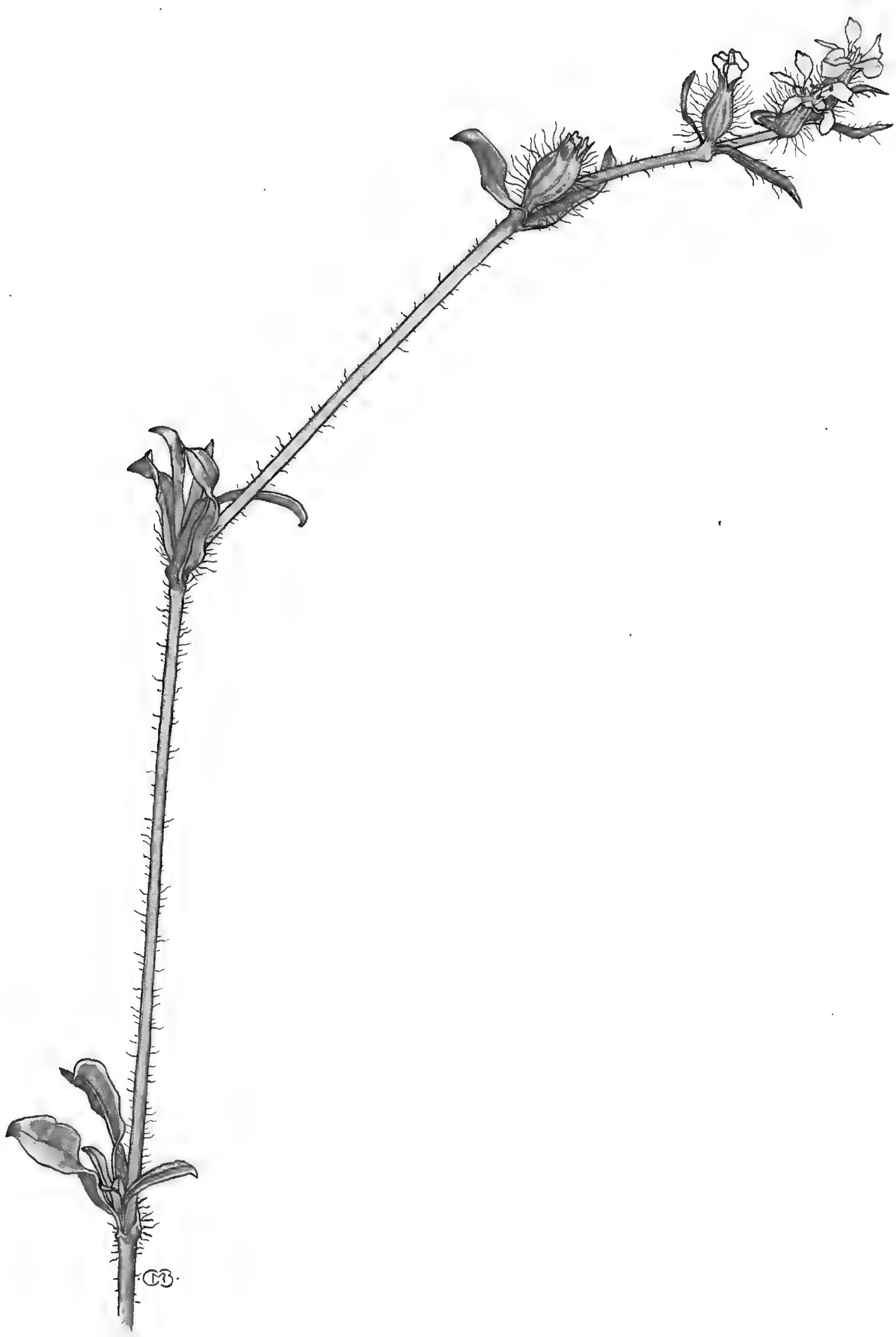
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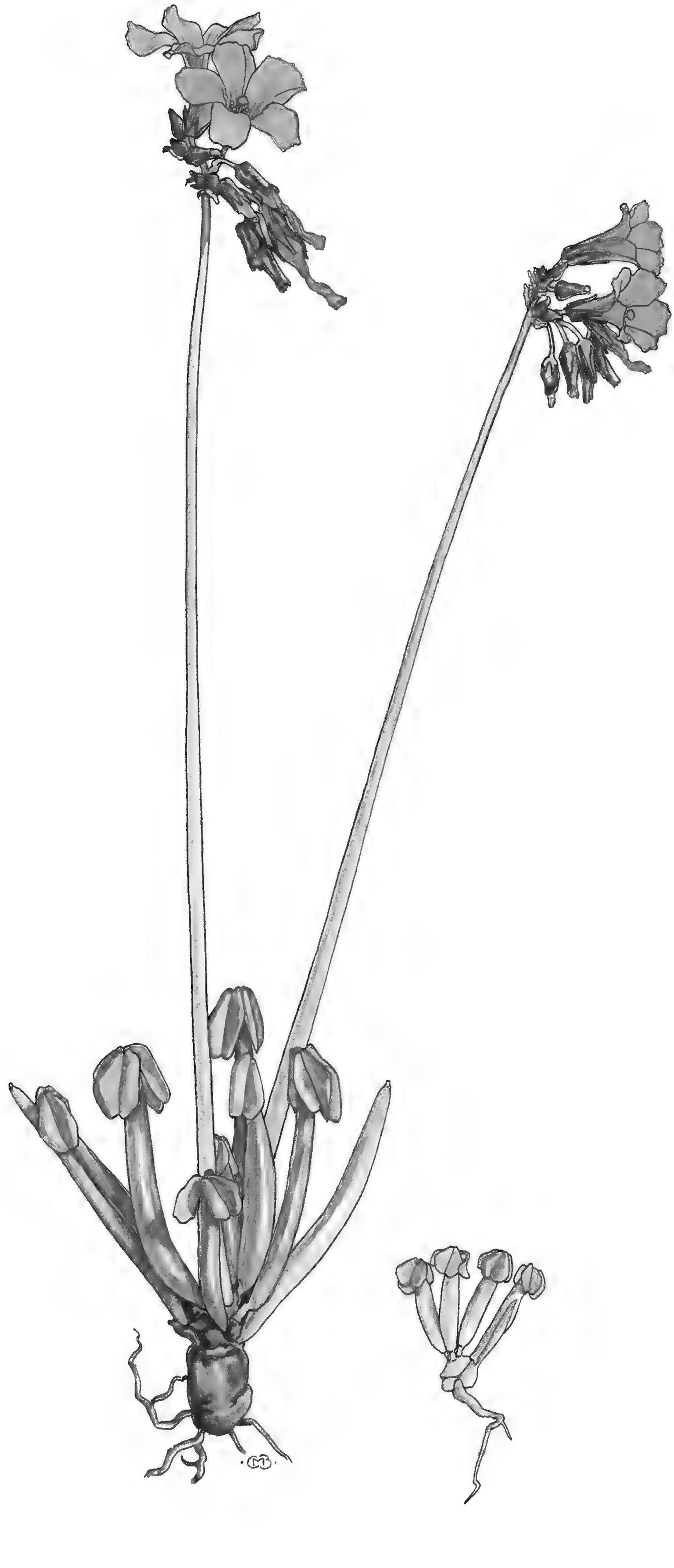
Carites rojas
Alonsoa meridionalis 9


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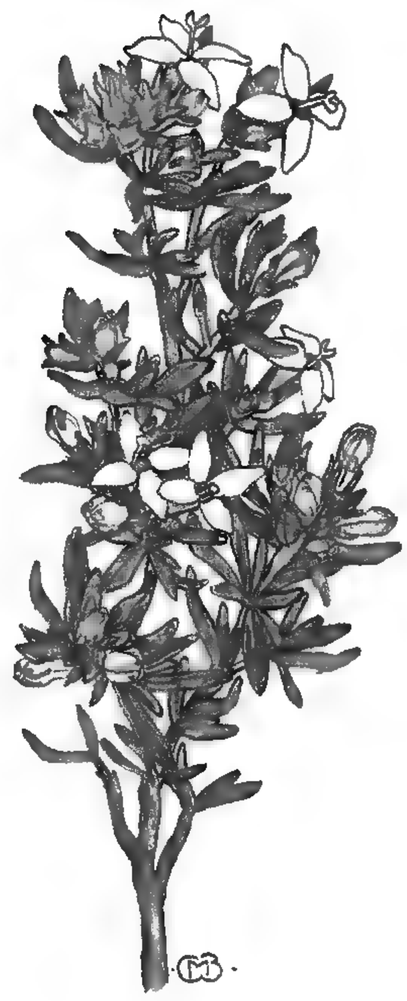






- Fairly continuous increase in around 4 yrs.
- Flowers 3 or more in one heart.









- Tropical.
- Around rocks also. Miniature bushy shrubs, 3 - 5 in. high. Crinkly - formidable masses of creeping stems, closely leaded. Three-lobed green petals.
- Tiny buds pink with carmine - colored anthers

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? \

Cupressa spilobelifolia ?

95



- Everywhere in and around Cuba; gardens, meadows, roadsides, walls, dry or wet places.
- Usually small and dense, In dark spots, the stems creep along rather bare. Stems round, thin, slightly pubescent.

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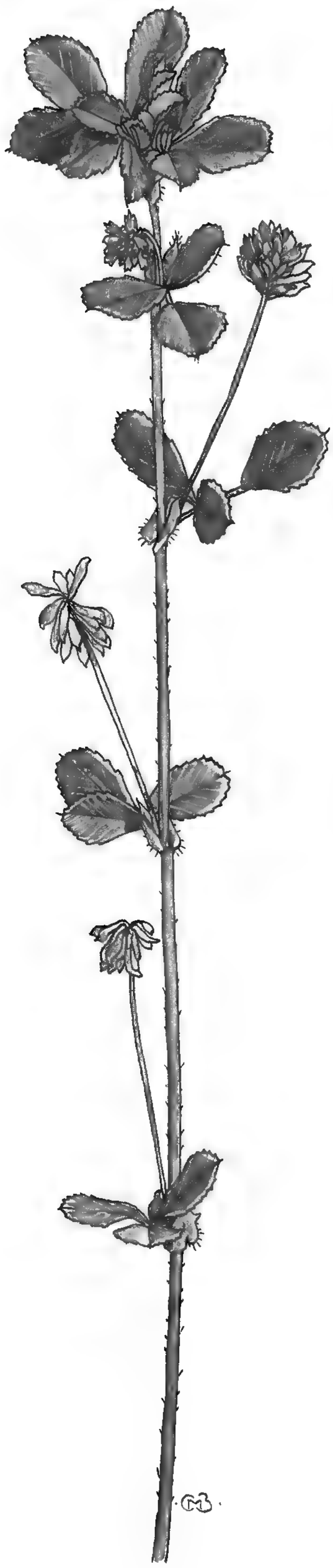


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- Above Guadalupe - among shrubs. Forms rather dense clusters.
- Peduncle very tall and rubbery - flexible, up to 30 cm. Peduncles short, all coming from stubby, succulent, light green stems.

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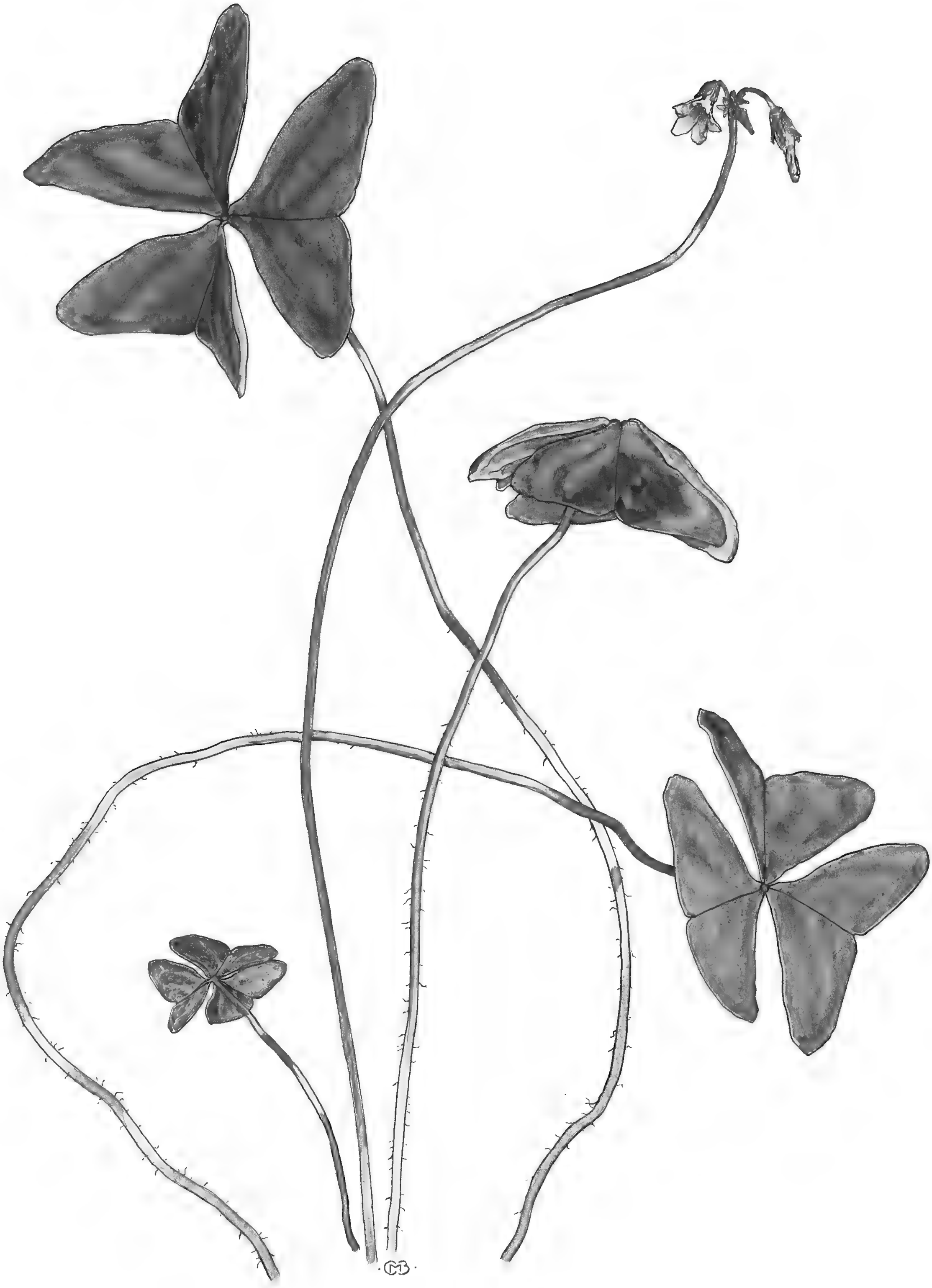


- Inflorescences and spikelets, Seeds - May - June.



- Near shrubs - e.g. along streams or in open places.
  Locally - [illegible].
- ± 30 cm tall. Stem [illegible] angular, pubescent, brown and woody at base, sometimes [illegible].





- Copper heads more [illegible] Heat [illegible] positive to active with the water [illegible] head.
- Each [illegible] a tiny sissile [illegible] 5 segments.
- [illegible] nearly all year round - [illegible] Eucalyptus [illegible].

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[illegible] Service -BA?



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Hypochoeris elata Gris.



from Collection of Wildflower Drawings of Ecuador
by Mary Barnas Pomeroy
(MB)

88 Boronda Rd.
Carmel Valley,
Calif.

Tel. 659 - 2052
Area Code 408

Jacinto aquático - Buchón - Jmancay
Eichhornia crassipes
Water Hyacinth
(actual size - small specimen)

194.







Appendix

ARTIST BIOGRAPHIES

Mary Barnas Pomeroy 1921-2010

Born in Hessen province of Germany, Mary's first art teacher was her father, Carl Barnas (1879-1953), a landscape and portrait painter. In 1935, choosing to uproot rather than support the Nazi regime, the Barnas family emigrated first to Prague, Czechoslovakia, then in 1936 to Quito, Ecuador. From age 17-24, apprenticed to her father, Mary illustrated over 200 native wildflowers of the Andes Mountains and the jungle. Her accounts are the first known illustrated botanical records made in that region and are now a permanent collection at the Missouri Botanical Garden, St. Louis, Missouri.

From 1943-1946 Mary illustrated for International Petroleum Company and the Geology Department of Quito University. In 1946 she immigrated to the United States to attend the Pennsylvania Academy of Fine Arts. Two years later, after intensive study in painting, she moved to the west coast and became an illustrator for the University of California, Berkeley, in the Botany Department. Much of her California botany work is published in the *Flora of the Marshes of California* by Herbert L. Mason.

Mary became a Carmel Valley, CA resident in 1956. She moved there with her husband Fred Pomeroy who had just been hired to teach at the local elementary school. They bought an acre of land next to the Carmel River and built a small post adobe house. She raised two daughters and spent her free time painting and illustrating the botany and natural surroundings of the valley and the coast. A dog, ducks and horses also joined the family and became favorite subjects. Mary and Fred belonged to several local painters' associations, but their favorite painting experience was just the two of them working plein aire with their watercolors.

The Pomeroy's spent their summer vacations camping, painting and hiking in the Sierras. The family also visited Europe to reunite with friends and family, painting in all their favorite places along the way.

Along with private commissions, Mary continued to illustrate wildflowers and in 2009 realized her dream of publishing them in a book entitled *Favorite Wildflowers of the West Coast*. This special collection is part of the botanical art archive at The California Academy of Sciences in San Francisco.

Mary stated, "My aim has always been to capture and express the qualities of life in all things...light and air translated into color, then 'form' onto the flat plane. My father taught me to 'see deep.' I hope that such feelings flow from the pictures to re-create my own joy in you, the beholders." She deeply loved Carmel Valley and all its wild plants and creatures. She often referred to it as 'Heaven on Earth' and that love still radiates from every piece she painted.

Mary's paintings have been displayed in international exhibitions and are also in the collections of UC Berkeley and the Hunt Institute for Botanical Documentation in Pittsburgh, PA. Since 1991, she has been listed in Who's Who in American Art/R.R. Bowker and since 1995, in Who's Who in the West/Marquis.

Carl F.J. Barnaš - A chronology

Carl Franz Joseph Barnaš was born August 14, 1879 in Friedberg, Hessen, Germany. After attending the Augustinerschule he worked for two years for his father, Carl Joseph Barnaš, a native of Bohemia and a painter-decorator by trade. Showing artistic talent early, financial help from a family friend enabled young Barnaš to attend the Kunstgewerbeschule in Kassel from 1896 - 1899. This was followed by a year of commercial work in Berlin. From 1901 - 1904 he studied at the Kunstakademie and at the Kunstgwerbemuseum in Berlin where he received thorough training in all aspects of visual art. Several years of independent work in Berlin were interrupted by study trips.

In 1907 Barnaš studied at the Académie Julien-Colarossi in Paris and he traveled to Britanny doing landscape studies in oil. He also made other study trips to England, Belgium, Holland, and Italy. In Germany he did landscape paintings on location, living in small villages in the Taunus and Vogelsberg mountains.

The war years (1914 - 1918) Barnaš spent as a medical orderly on both fronts. Many pencil drawings were done at that time. Some of these were later used as motifs for etchings.

After the war Barnaš married Elisabeth J.G. van Holk, a native of the Netherlands. The couple lived in Holland for one year at which time the artist painted landscapes in oil. In 1921 the family, including two daughters, moved to Laubach, Hessen, Germany. Here manifold activities occupied the artist: landscape painting (always his first love), illustrations, still life, etchings, portraits, heraldic work, articles and illustrations for newspapers, books, and magazines. In 1930 Barnaš was listed in Dresslers Kunsthandbuch, Verlag Karl Curtius, Berlin W 35, an artist's registry.

The busy years in Laubach came to an end when Barnaš refused an order of the Reichskulturkammer (Nazi state art organization) to register. He was therefore prohibited from exhibiting his work or taking part in competitions. He left his native country for reasons of conscience.

In 1936 after a year's stay in Prague Barnaš emigrated to Ecuador, South America. In Quito the artist first held a teaching position at the Escuela Nacional de Bellas Artes and then established himself as an art restorer. He also gave private lessons at his home, did portraits, and occasional commissioned work.

While Barnaš made his living doing restoration work for private collectors, churches, and monasteries, he became well-known in that field especially for his efforts to save valuable colonial art works for posterity. He also had the opportunity from time to

time to accompany scientists from the Central University on field trips to remote areas of the country. On such trips he indulged his favorite field of landscape painting in oil. He also made trips on his own or in the company of his artist daughter. In 1946 and 1948 he traveled to Barranquilla, Colombia, for family reasons, taking the opportunity to paint the Caribbean coast and surroundings.

In 1949 after his wife's death in Quito, Barnaš traveled to California to see his younger daughter, then working as a botanical illustrator at the University of California in Berkeley. He also enjoyed a reunion with his long-time friend and fellow student in Kassel and Berlin, professor Eugen Neuhaus, the American (naturalized in 1911) artist and well-known teacher at the University in Berkeley.

In 1951/52 Barnaš made one last trip to Europe (Holland, Germany, Switzerland, Italy, France) in the company of his younger daughter, Mary Barnaš Pomeroy, an artist in her own right (now listed in Who's Who in American Art, 1991/92 edition). After that trip he settled in Houston, Texas, at his elder daughter's home. He died there on June 3, 1953. His work is in private and public collections in Europe and Ecuador. Much of it is in the collections of his family in the United States.

Compiled by Dora L. Skipper (Barnaš)

December 11, 1991.

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Appendix

ARTIST PHOTOS

Mary Barnaš under 'Mata-Palo' (Strangler Fig), Archidona – Oriente, 1940

Carl Barnaš with 'Paloma' from 'Hacienda Dos Rios', Tena – Oriente, 1940



Mary Barnaš on jungle trail to Archidona – Oriente, 1940



Rio Misahualli during Barbasco fishing, 1940

Mary Barnaš Pomeroy - Oil Paintings
(C.M. Barnaš)



La Trocha, Saloya/Occidente – Ecuador, 1944, oil painting
by C.M.Barnas-Pomeroy (1921-2010)



Verbascum thapsis (common Mullein), Quito – Ecuador, 1945,
oil painting by C.M.Barnas-Pomeroy (1921-2010)

Cayambe & Agave, Quito – Ecuador, 1945, oil painting
by C.M.Barnas-Pomeroy (1921-2010)



Cruz Loma & Rucu Pichincha, Quito/Floresta – Ecuador, 1945,
oil painting by C.M.Barnas-Pomeroy (1921-2010)

The Steep Trail, young Eucalyptus in background, Quito –Ecuador, 1944,
oil painting by C.M.Barnas-Pomeroy (1921-2010)



The Deep Jungle, Saloya/Occidente – Ecuador, 1944, oil painting
by C.M.Barnas-Pomeroy (1921-2010)



Rainforest Clearing, Saloya/Occidente – Ecuador, 1944, oil painting
by C.M.Barnas-Pomeroy (1921-2010)



Jungle Cabin, Saloya/Occidente – Ecuador, 1944, oil painting
by C.M.Barnas-Pomeroy (1921-2010)



Cruz Loma – Rucu Pichincha – Condor Guachi from La Floresta, Quito, 1944,
oil painting by C.M.Barnas-Pomeroy (1921-2010)

Carl F.J. Barnaš - Oil Paintings

Pichincha and agave, Quito – Ecuador, 1937, oil painting
by Carl Barnas (1879-1953)

Road to Santo Domingo de los Colorados/Saloya – Ecuador,
1940, oil painting by Carl Barnas (1879-1953)



Lonely giant, jungle clearing near Archidona/Oriente – Ecuador,
1943, oil painting by Carl Barnas (1879-1953)

Quebrada Volcán, vicinity of Quito – Ecuador, 1937,
oil painting by Carl Barnas (1879-1953)



Yumbo Indian hut and banana trees near Archidona/Oriente – Ecuador, 1940, oil painting by Carl Barnas (1879-1953)



Pasture & rainforest near Archidona/Oriente – Ecuador, 1943,
oil painting by Carl Barnas (1879-1953)



Hacienda in Guápulo, vicinity of Quito – Ecuador, 1937,
oil painting by Carl Barnas (1879-1953)

Giant jungle leaves with red-blooming Begonia, Saloya – Ecuador, 1938,
oil painting by Carl Barnas (1879-1953)



Landscape near Quito – Ecuador, 1937, oil painting
by Carl Barnas (1879-1953)



Waterfall – Ecuador, 1938, oil painting by Carl Barnas (1879-1953)

Jungle by Rio Transito Rivulet, Saloya – Ecuador, 1940,
oil painting by Carl Barnas (1879-1953)



Landscape near Quito,Ecuador, view of Mt Corazón and Atacazo in background, 1937, oil painting by Carl Barnas (1879-1953)



Paso de Totorillas, Mt Chimborazo – Ecuador, 1937,
oil painting by Carl Barnas (1879-1953)



Rainforest Interior II, Saloya – Ecuador, 1938, oil painting
by Carl Barnas (1879-1953)



Crags of Rucu Pichincha from Páramo – Ecuador, oil painting
by Carl Barnas (1879-1953)

Barnas



Indian chozas, slopes of Mt Chimborazo, Hacienda Chuquipoquio – Ecuador, 1937, oil painting by Carl Barnas (1879-1953)



Rucu seen from Guagua Pichincha – Ecuador, oil painting
by Carl Barnas (1879-1953)



Rainforest Interior III, El Oriente – Ecuador, 1940,
oil painting by Carl Barnas (1879-1953)



El Sumaco, seen from Archidona, Oriente – Ecuador, 1942,
oil painting by Carl Barnas (1879-1953)

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